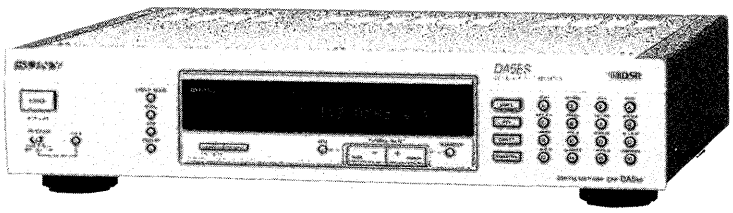
DAR-DA5ES

SERVICE MANUAL

AEP Model



SPECIFICATIONS

DSR tuner section

Tuning range	50 to 470 MHz (cable:100 kHz step) 950 to 2,050 MHz (satellite:500 kHz step)
Input level	50 to 470MHz: 45 dBμV to 95dBμV 950 to 2,050 MHz: 45 dBμV to 95dBμV
LNC power supply voltage	OFF/14 V/18 V, DC
LNC power supply current	300 mA max.
Digital outputs	COAXIAL OPTICAL
Distortion	0.006 % at 1 kHz
S/N ("A" weighted)	110 dB
Separation	102 dB at 1 kHz
Frequency response	15 Hz to 15 kHz ±0.2 dB
Sampling frequency	32 kHz
D/A converter	Advanced pulse D/A
SPEECH/MUSIC control	20 dB max. in 20 step

FM tuner section

Tuning range	87.5 - 108.0 MHz (50 kHz step)
Sensitivity	Mono: 1.1 μV Stereo: 35 μV
S/N ("A" weighted)	Mono: 78 dB Stereo: 74 dB
Harmonic distortion at 1 kHz	Mono: 0.2 % Stereo: 0.4 %
Separation	45 dB at 1 kHz
Frequency response	30 Hz - 15 kHz ±0.5 dB
Selectivity	70 dB (Narrow) 45 dB (Wide) at 300 kHz

— Continued on next page —

DSR/FM/AM TUNER

SONY

AM tuner section

Tuning range	With 9 kHz step: 531 - 1,602 kHz
Aerial	Loop aerial

General

Power requirements	220-230 V, AC 50/60 Hz
Power consumption	35 W
Input impedance	75 ohms (exept AM ANTENNA)
Input connector	CABLE: IEC-male SATELLITE 1 ST IF: F-female FM ANTENNA: IEC-male
Dimensions	430 x 98 x 340 mm ($17 \times 3\,^{7}/_{8} \times 13\,^{3}/_{8}$ inch)
Weight	5.6 kg (12 lbs 6 oz)
Supplied accessories	Audio cord (1) AM loop aerial (1) FM wire aerial (1) Remote commander (remote) (1) Size AA (R6) batteries (2)

Design and specifications are subject to change without notice.

Note

Preset stations and other items stored in the tuner's memory may be cleared if the power is left off for more than 2 weeks in a row. If this happens, make the settings again.

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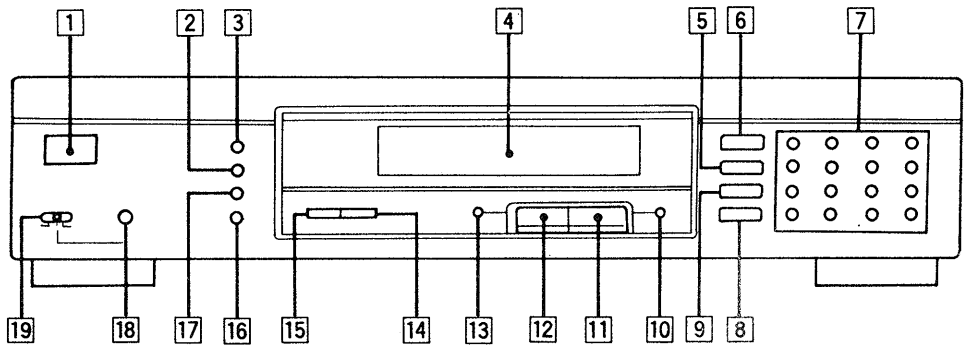
SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SECTION 1
GENERAL

Front Panel



1 POWER switch
2 MONO button
3 DISPLAY MODE button
4 Display window
5 PTY button
6 SHIFT button
7 Preset buttons
8 MEMORY button
9 DIRECT button
10 CHARACTER button
11 TUNING/SELECT (+, SPEECH) button
12 TUNING/SELECT (–, MUSIC) button
13 MENU button
14 FM INPUT button
15 BAND (DSR/FM/AM) button
16 DISPLAY button
17 EON button
18 CHECK botton
19 PROGRAM (OFF/SET/ON) switch

Changing the Display Language

You can choose either an English or a German language display. The factory preset language is English. To change the display language, follow the steps below.

1 Turn the power off.

2 Press POWER while holding down MENU. The power comes on and either "English" or "German" appears in the display, for about 2 seconds, to indicate the current setting.

See the following chart for differences between the English and German display messages. See page 18 for differences between the English and German programme type displays.

(continued)

English	German
INPUT ATT : ON	Dämpfung : EIN
INPUT ATT : OFF	Dämpfung : AUS
IF : NARROW	ZF : SCHMAL
IF : WIDE	ZF : BREIT
No PTY Data	Kein PTY Sign
No Text Data	Kein Text
Text Waiting	Warte auf RT
PTY Search	PTY Suchlauf
PTY Change	Geandert PTY
not found	nicht vorh.
PTY Alarm	PTY Alarm
Now TA	VF - TA
Now NEWS	VF - NEWS
Now INFO	VF - INFO
No TA service	Kein TA
No News	Kein NEWS
No Info	Kein INFO
Weak Signal	Sign. schwach
Returning	Serv. gestört
Memory OK	Gespeiehert
No Programme*	Kein Programm*
Not audio	Nicht Audio
CT Wait	Warte auf CT
Command Mode	Fernbedienung
LNC Overload	Kurzschlub
No TIME data	Keine Zeït

* When no programme is broadcast.

Storing FM Stations Automatically in Alphabetical Order ("Auto-betical")

With "Auto-betical select" you can automatically store up to 32 FM stations in alphabetical order without redundancy. For Radio Data System (RDS) stations, the tuner first checks for stations broadcasting the same programme, then stores only the one with the clearest signal. The selected RDS stations are sorted alphabetically by their Programme Service name, then assigned a two-character preset code (For more details on RDS, see page 17.)
Regular FM stations are assigned two-character preset codes and stored after the RDS stations. If you want to store FM, AM, or DSR stations one by one, follow the procedures on pages 15 and 16.

1 Turn the power off.

2 Press POWER while holding down MEMORY. The tuner scans and stores all the FM and FM RDS stations in the broadcast area.

Notes

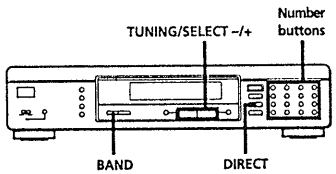
- If you move to another area, do this procedure again to store stations in your new area.
- The following settings are stored along with the station:
  INPUT ATT: OFF
  IF BAND: WIDE
  MONO/STEREO: STEREO
- If you move the aerial after storing stations using "auto-betical select," the stored settings may no longer be valid. If this happens, store the stations again.

This section is extracted from instruction manual.

Receiving AM and FM Broadcasts

You can tune in both AM and FM broadcasts by using either direct or manual tuning.

Before you begin, make sure that you connected the supplied AM aerial and either an FM aerial and/or a cable hookup as indicated on pages 5 and 6. Also, be sure to select the proper FM input (see page 9). Also, be sure the STEREO indicator is on when you receive an FM stereo broadcast.



Direct tuning

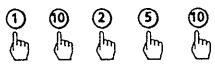
Direct tuning lets you tune in broadcasts by entering the frequency of the station.

1 Press BAND to select either AM or FM.

2 Press DIRECT.

3 Use number buttons 1 through 10 to enter the number of the frequency you want to tune.

Example 1: FM 102.50 MHz



Example 2: AM 1350 kHz

The tuner tunes directly to the station you entered.

Notes

- If you enter a frequency not covered by the tuning interval, it is automatically rounded to the closest value covered by the tuning interval.
- If the numbers you entered flash in the display, make sure you've entered the right frequency. If not, re-enter the frequency. If the numbers still flash and the station is not received, that frequency is not used in your area.

Manual tuning

Manual tuning lets you search through all the stations broadcasting on each frequency band and tune in stations with extremely weak signals.

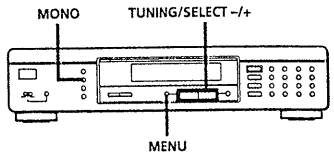
1 Press BAND to select either AM or FM.

2 Press TUNING/SELECT – or + repeatedly to tune in the frequency you desire.
Press TUNING/SELECT – for a lower frequency.
Press TUNING/SELECT + for a higher frequency.
Press and hold to tune at a higher speed.

For stations that are difficult to receive
Try repositioning the loop aerial while tuning. Placing the supplied AM loop aerial near a window will also improve reception quality.

Features for FM receiving

You can alter the reception quality in FM mode to obtain the clearest possible signal under a variety of circumstances. The tuner stores the following adjustments together with the frequency when you make tuning presets. See "Presetting AM and FM stations" (page 15) for details regarding station presets.



If an FM programme is distorted
Press MONO to select "MONO." You will not have the stereo effect but the distortion will be reduced. To return to the stereo mode press MONO again. (The MUTING indicator also lights in when you choose STEREO tuning.)

Note
Keep volume low when tuning in MONO to avoid speaker damage caused by inter-station noise.

If interference occurs during FM reception
Use the IF band function to eliminate interference from adjacent stations.

1 Press MENU repeatedly until "IF: WIDE" or "IF: NARROW" is displayed.

2 Use TUNING/SELECT – or + to select either "WIDE" or "NARROW." (Factory preset is "WIDE.")
Select WIDE for distortion-free sound when the broadcast signal is strong and there is no interference.

(continued)

Select NARROW to sharpen the reception quality and discern a specific frequency when two broadcast frequencies are located close together.

To adjust the FM input level
You can lower the input level of the signal being received for better reception. To determine the appropriate level, adjust the attenuator while listening to an FM broadcast and choose the level you prefer.

1 Press "MENU" repeatedly until "INPUT ATT: ON" or "INPUT ATT: OFF" appears in the display.

2 Use TUNING/SELECT – or + to select either "ON" or "OFF." (Factory preset is "OFF.")
Select "ON" to decrease the input level.
Select "OFF" to receive at the normal input level.

To improve reception by adjusting the signal meter
You can use the digital signal meter to check the signal strength of the radio frequencies. The display range of the digital meter is from 16 to 70 dB (1µV of radio frequency voltage = 0 dB). To obtain a signal to noise ratio sufficient for receiving a stereo broadcast, we recommend a reading greater than 50 dB. (You can also press MONO to change the reception quality while using the signal meter to determine the best reception.)

1 Tune in an FM station.

2 Press DISPLAY repeatedly to display the digital signal meter.

3 Repeat steps 1 and 2 until you find a frequency with good reception.

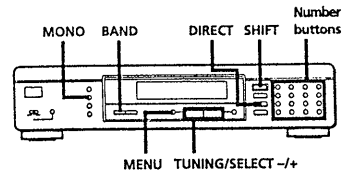
Understanding Digital Satellite Radio (DSR)

Digital Satellite Radio (DSR) is a completely new radio broadcasting system that uses a satellite to transmit digital broadcast signals. Unlike conventional (AM and FM) radio broadcasts, which transmit only one analog station per frequency, DSR broadcasts can digitally transmit up to 16 stereo (or 32 monaural) stations per frequency along with information regarding the type of programmes being broadcast. DSR broadcasts also include station name information, which is displayed automatically.

Your tuner is factory preset with the broadcast frequency of the satellite currently transmitting DSR broadcasts ("Kopernikus"), as well as the predominant cable DSR broadcast frequencies, to make DSR tuning more convenient.

Receiving Digital Satellite Radio (DSR) Broadcasts

You can choose from three different tuning methods to receive DSR broadcasts: factory presets, direct tuning, or manual tuning. Before you begin, make sure you have connected a satellite (parabola) aerial and/or cable outlet as indicated on pages 6 and 7.



Receiving DSR broadcasts using the factory preset frequencies

You can receive DSR broadcasts via satellite or cable hookups simply by using the factory preset frequencies.

1 Press SHIFT to select a preset frequency*.

to receive	select
CABLE 118 MHz	a
CABLE 132 MHz	b
CABLE 3[illegible] MHz	c
SATELLITE (Kopernikus) 1,150 MHz (LNC off)	d

* Receivable frequencies may vary depending on your location. See page 16 for available DSR cable and satellite frequencies.

2 Use the number buttons (1 to 16) to select one of the 16 stations broadcast at the preset frequency. See the table on page 22.

3 If you selected "d" in step 1, press MENU to display the Low Noise Converter (LNC) setting: "LNC: A (14V)," "LNC: B (18V)," or "LNC: OFF (0V)," and then use TUNING/SELECT –/+ to select the voltage supply appropriate for your aerial. The display changes as follows:

OFF (0V) ⟷ A (14 V) ⟷ B (18 V)

Notes

- See the instruction manual for your parabola aerial for voltage information.
- If a current greater than 300 mA is supplied to the aerial, the tuner stops functioning and "LNC Overload" appears on the display. If this happens, turn off the power to this unit and take care of the overload. The tuner will function normally when you turn it back on if the overload (short circuited aerial, etc.) has been eliminated.
- When tuning a satellite broadcast, it may take 10 seconds or more to receive the frequency.
- To insure stable LNC operation, the last selected voltage output to the LNC must be maintained when you switch to other bands. Therefore, its indicator also remains lit.
- The LNC power supply settings remain stored in the memory with each preset DSR satellite frequency unless you re-store the preset (page 16).

When "◄ TUNED" or "TUNED ►" appears in the display

The frequency's reception is slightly off. We recommend following the procedure in "Presetting Other DSR Frequencies" on page 16 to re-store the frequency.

Tuning directly to a specific DSR frequency

You can use direct tuning to receive DSR broadcasts from frequencies not stored in the preset memory. See "Presetting Other DSR frequencies" on page 16 to make a preset for a new frequency.

1 Press BAND to select either DSR SATELLITE or DSR CABLE.

2 Press MENU repeatedly to display the LNC setting and use TUNING SELECT –/+ to set the power supply voltage if you selected DSR SATELLITE in step 1.
Press MENU repeatedly to return to the normal display.

3 Press DIRECT.

4 Use number buttons 1 through 10 to enter the frequency you want to tune.
Example: to enter frequency 1460.0 MHz (on the DSR SATELLITE band).

If "◄ TUNED" or "TUNED ►" appears in the display

Press TUNING/SELECT –/+ until only "TUNED" appears.

5 Use the number buttons (1-16) to select one of the 16 stations broadcast on that frequency.

Notes

- If you enter a frequency not covered by the tuning interval, it is automatically rounded to the closest value covered by the tuning interval.
- If the numbers you entered flash in the display, make sure you've entered the right frequency. If not, re-enter the frequency. If the numbers still flash and the station is not received, that frequency is not used in your area.

Tuning manually to a DSR frequency

1 Press BAND to select either DSR SATELLITE or DSR CABLE.

2 Press MENU repeatedly to display the LNC setting and use TUNING SELECT –/+ to set the power supply voltage if you selected DSR SATELLITE in step 1.
Press MENU repeatedly to return to the normal display.

3 Press TUNING/SELECT – or + repeatedly until you reach the frequency you desire.
To tune at a higher speed, hold down the TUNING/SELECT – or + buttons.

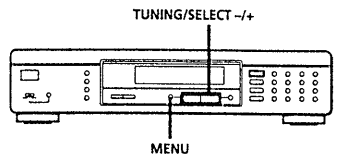
If "◄ TUNED" or "TUNED ►" appears in the display

Press TUNING/SELECT –/+ until only "TUNED" appears.

4 Use the number buttons (1 to 16) to select one of the 16 stations broadcast on that frequency.

Features for DSR receiving

In addition to the several DSR tuning features, this tuner also incorporates a MUSIC/SPEECH balance function to help you get the most out of DSR broadcasts.



Selecting MONO 1 or MONO 2

When the broadcast is monaural, two broadcast stations can be broadcast on one channel. Press MONO to select the station you desire, MONO 1 or MONO 2. The MONO setting is set for the entire DSR band and only changes when you press MONO.

(continued)

You cannot receive DSR stereo broadcasts in monaural. Likewise, the muting function is always active and cannot be canceled.

Adjusting the music/speech balance

Once you have tuned in a DSR station, you can adjust the balance of loudness between the music and speech while listening to a programme. The factory setting is an equal balance of MUSIC and SPEECH.

1 Press MENU repeatedly to display "BALANCE MU/SP."

2 Use TUNING/SELECT –/+ to adjust the balance ratio to the level you prefer.
The display changes to "MU ▌ SP" when you press TUNING/SELECT – or + (or if you wait 4 seconds).
Pressing TUNING/SELECT + shifts the balance toward "SP" (speech).
Pressing TUNING/SELECT – shifts the balance toward "MU" (music).

3 Press MENU repeatedly to return to the normal display after adjusting the music/speech balance.

Note

The music/speech balance function does not effect the DSR DIGITAL OUT.

Using the digital signal meter with the DSR CABLE and DSR SATELLITE bands

You can use the digital signal meter to check the signal strength of the radio frequencies. The signal meter range for the DSR band is 35 to 90 relative units.

1 Tune in an DSR frequency.

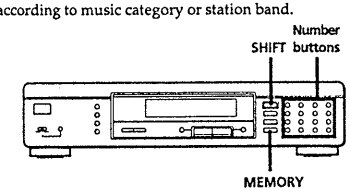
2 Press DISPLAY repeatedly to display the signal meter.

Notes

- With the FM band, the numerical value displayed on the signal meter is proportionate to the signal-to-noise ratio. With the DSR bands, however, the signal to noise ratio increases and decreases without relation to the numerical value displayed on the signal meter
- With the DSR SATELLITE band, noise from the satellite aerial may cause a numerical value to be displayed on the signal meter even though there is no signal.

Presetting AM and FM Stations

This section shows you how to store up to 32 of your favorite AM, FM, and FM RDS stations on preset codes combined of characters (A or B) and numbers (1-16), such as A5. You can use the letters to classify stations according to music category or station band.



1 Tune in the AM or FM station you wish to store.
If you are not familiar with how to tune in a station, see "Receiving AM and FM broadcasts" on page 11.

2 Press MEMORY.

3 Press SHIFT to choose either A or B.
The letter you choose appears in the display.

4 Press a number button (1-16) and the tuner stores the station under the preset code you specified.

If you've made a mistake
Press MEMORY before completing the preset code.

5 Repeat steps 1 through 4 to store other stations.

IF BAND, FM INPUT, INPUT ATT, and MONO settings are stored automatically
When you preset a station the current settings are stored together with the station. The tuner switches to those settings whenever you choose that preset code.

If you want to label the stations
Follow the procedure described in "Naming AM and FM Preset Stations" after you preset the station. When you preset an RDS station broadcasting station name information, the station name is automatically stored at the station preset.

Tuning preset AM and FM stations

You can tune directly to a preset station by entering its preset code.

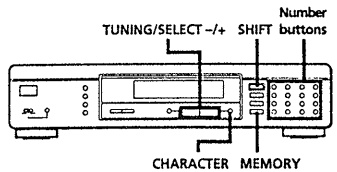
1 Press SHIFT to select A or B.

2 Press a number button (1-16).
The tuner automatically tunes in the station stored under that two character code.

Naming AM and FM Preset Stations

This section shows you how to name preset AM and FM stations (except for FM RDS stations). Once you store a name for a preset station, the name appears in the display instead of the frequency when you tune to that preset station. The current frequency, FM INPUT, MONO, INPUT ATT., and IF BAND information are stored in addition to the station name.

If you want to create a name for a previously stored preset station, be sure to tune to that preset code before proceeding to the following steps. Otherwise, all previously preset information will be changed.



1 Tune in a station you want to name.

2 Press CHARACTER.

3 Press TUNING/SELECT – or + repeatedly to obtain the character you desire.
See the following character list for the characters you can use when creating a name.

4 Press CHARACTER to move the cursor into position for the next character.

5 Repeat steps 3 and 4 until you have entered all the characters for your station name.

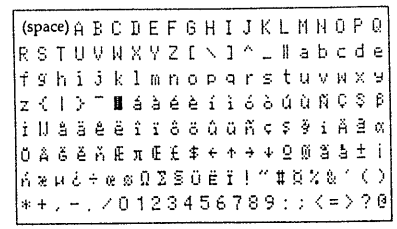
6 Press MEMORY after completing the station name to make a preset.

7 Press SHIFT to select A or B and press a number button (1-16) to complete the two character preset code.
When you've already preset the station, make sure to select the same preset code as before.

If the display changes before you specify the preset code
Press CHARACTER and the name reappears in the display.

(continued)

Character list (the first character is a space)


(space) A B C D E F G H I J K L M N O P Q
R S T U V W X Y Z [\ ] ^ _ ‖ a b c d e
f g h i j k l m n o p q r s t u v w x y
z { | } ¯ ■ á à é è í ì ó ò ú ù Ñ Ç $ ¤
¡ ¿ ä ë ö ü ê î ô û ñ ç ß ÿ ¡ Ä Ë Ö Ü
Ø Å Æ Œ Ê π Œ £ $ ← ↑ → ↓ Ω ₪ ã ẽ ± ¡
Á ¤ ш ¿ ÷ ¤ ¤ Ω Σ $ Ü Ë Ï ! " # Ø % & ' ( )
* + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @

1 Tune in the DSR frequency you wish to store.
Currently available frequencies are listed on the table below.

Reception area	Frequency	Origin
Germany	CABLE 118 MHz	Germany
Switzerland	CABLE 118 MHz	Switzerland
	CABLE 310 MHz (or 132 MHz)	Germany
Austria	CABLE 118 MHz	Germany
Germany and surrounding areas	SATELLITE (1st IF) 1,150 ±2 MHz (Kopernikus)	Germany

As of December 1994

If "◄ TUNED" or "TUNED ►" appears in the display
Press TUNING/SELECT –/+ until only "TUNED" appears.

2 Press MEMORY.

3 Press SHIFT to choose a preset letter (a, b, c, or d).
The letter you choose appears in the display.

4 Press a number button (1-16).
The tuner stores the frequency at the letter you specified (a, b, c, or d).

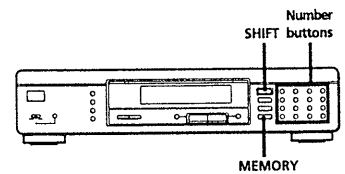
Presetting Other DSR Frequencies

Why you need to preset DSR frequencies

Since DSR is an especially wide frequency band, you'll probably find it easiest to use preset frequencies when tuning. This tuner comes with some currently available DSR frequencies preset in the tuner's memory (see "Receiving DSR broadcasts using the factory preset frequencies" on page 12), but you can change them and make your own presets as the DSR network expands. If some of the factory preset frequencies are not receivable in your area, use the letters those frequencies are stored at first when storing a new frequency.

Presetting DSR frequencies

This section shows you how to store and tune up to 4 different DSR frequencies. DSR frequencies can be stored at preset letters a, b, c, and d. Although it is necessary to press one of the number buttons (1-16) to store a DSR frequency, the number button does not determine the location of the frequency. All channels (1-16) on the stored frequency are automatically available for selection after you choose a preset letter (a, b, c, or d) by pressing SHIFT.



Tuning preset DSR frequencies and stations

You can tune directly to a preset frequency simply by choosing its preset letter (a, b, c, or d).

1 Press SHIFT to select the preset (a, b, c, or d).
Each time you press SHIFT, a letter (a, b, c, or d) appears in the display.

2 Press any one of the number buttons (1-16).
The preset frequency appears. The station name of the channel broadcast at the number you pressed is displayed and you can hear the broadcast.

3 If the broadcast is monaural, press MONO to select the station you desire, MONO 1 or MONO 2 (the factory setting is MONO 1).

To select another channel from the same frequency
Press a different number button (1-16).

Using the Radio Data System (RDS)

What you can do with the Radio Data System

Radio Data System (RDS) is a broadcasting service that allows radio stations to send additional information along with the regular radio programme signal. This tuner offers you three convenient RDS features: RDS information display; Monitoring of traffic, news, or information programmes; and locating stations by programme type. Although RDS refers specifically to programme services for FM stations*, you can also monitor the stations on the selected DSR preset frequency for news and information or choose to locate stations by programme type.

Note

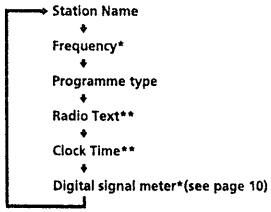
RDS may not work properly if the station you are tuned to is not transmitting the RDS signal properly or if signal strength is weak.

* Not all FM stations provide RDS service, nor do they provide the same types of services. If you are not familiar with the RDS system, check with your local radio stations for details on RDS services in your area.

Receiving RDS broadcasts

Simply select a station from the FM or DSR band. When you tune in a station that provides RDS services, the station name appears in the display.
With the FM band, you can only use the RDS service when the RDS indicator is lit.

To check the display for RDS information, press DISPLAY. The display advances one step at a time through the following information.



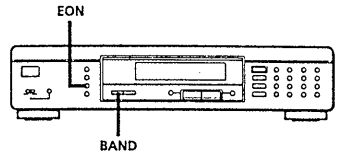
* This information also appears for non-RDS FM stations.
** Unlike FM-RDS, radio text and clock time information cannot be obtained from DSR broadcasts.

Notes

- If there is an emergency announcement by governmental authorities, ALARM flashes in the display.
- The following messages appear if a station is not providing a particular RDS service:
  "No PTY Data" (the programme type is not available)
  "No Text Data" (text data is not available)
  "No TIME Data" (clock time data is not available)

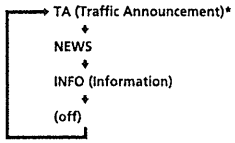
Monitoring traffic, news, or information programmes (EON)

Enhanced Other Networks (EON) allows the tuner to automatically switch to a station broadcasting traffic, news, or other information. After the programme ends, the tuner switches back to the station you were listening to.



1 Tune to a preset DSR or FM RDS station.
When you tune an FM station with RDS-EON services, the "EON" indicator lights in the display.
When you tune to a station that provides the TA (Traffic Announcement) service, the "TP" (Traffic Programme) indicator lights in the display.

2 Press EON to select the kind of programme you want to monitor.
Each time you press the button, the display changes as follows:



* Unlike RDS-EON, DSR broadcasts do not provide data for detecting TA programmes. Therefore, EON TA reception is not possible on the DSR SATELLITE or DSR CABLE bands.

The tuner enters EON standby mode.
When a station starts broadcasting the programme you selected, the tuner switches to the station and the selected indication (e.g., "TA") flashes in the display.
After the programme ends, the tuner switches back to the station you were listening to.

To stop monitoring the programme

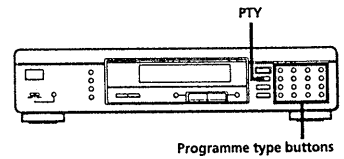
Press EON repeatedly until "TA," "NEWS," and "INFO" are no longer displayed.

Notes

- "Weak Signal" appears when the selected station has a weak signal. "Returning" appears when the tuner is trying to re-tune a station with a weak signal.
- Turn off the EON feature when you want to record a programme without interruptions, especially when you want to do timer recording.
- "No TA service," "No News," or "No Info" appears in the display if you select an EON programme before tuning to an FM RDS or DSR station.
- You cannot monitor programmes on the FM band if the "EON" indicator does not appear in the display, even if you select TA, NEWS, or INFO.

Locating a station by programme type (PTY search)

You can locate a station you want from the FM or DSR bands by selecting a programme type. The tuner tunes in the type of programmes currently being broadcast from the FM RDS or DSR stations stored in the tuner's preset memory.



1 Press PTY.

2 Press the programme type button that corresponds to the programme type you want. See the following table for programme type information.
The tuner starts searching the preset FM RDS stations and the preset DSR frequency for the programme.
When the tuner finds the programme you are looking for, it stops searching and tunes in the station broadcasting the programme.

To tune another station by programme type

Repeat steps 1 and 2.

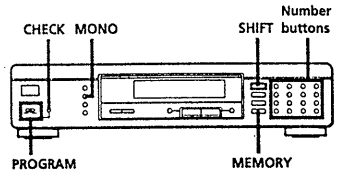
Programme type button	English display * (German display)	What you hear
NEWS	News (Nachrichten)	News programmes
AFFAIRS	Affairs (Zeitgeschehen)	Topical programmes that expand on current news
INFO	Information (Spez.Wortprog)	Programmes about consumer affairs, medical advice, and weather
SPORT	Sport (Sport)	Sports programmes
EDUCATE	Education (Weiterbildung)	Educational programmes, such as a "how-to" programme and advice
DRAMA	Drama (Hörsp/Literat)	Radio plays and serials
CULTURE	Culture (Kultur)	Programmes about national or regional culture, such as religion, language, and societal concerns
SCIENCE	Science (Wissenschaft)	Programmes about the natural sciences and technology
VARIED	Varied (Unterhaltung)	Programmes containing celebrity interviews, panel games, and comedy
POP M	Pop music (Popmusik)	Popular music programmes
ROCK M	Rock music (Rockmusik)	Rock music programmes
M.O.R.M	M.O.R. Music (U-Musik)	Easy Listening (middle of the road music)
LIGHT M	L.Classical (L-Klassik)	Classical music, such as instrumental, vocal, and choral
CLASSICS	S.Classical (E-Klassik)	Performances of major orchestras, chamber music, opera, etc.
OTHER M	Other Music (Spez.Musik)	Music that does not fit into any of the above categories, such as jazz and rhythm and blues
UNDEFINED	PTY undefined (Keine Kennung)	Any programmes not defined above

* When two programme types are displayed simultaneously, only 6 characters (maximum) from each programme type are displayed.

(continued)

Making a Timer Programme

With the PROGRAM selector you can store up to 3 different programmes for timer operation. By connecting an optional audio timer, you can specify times to receive up to three programmes. To use this function, make sure your audio timer can control at least three on-off operations.



1 Set PROGRAM to SET.

2 Press MEMORY.
The MEMORY indicator lights in the display.

3 Use SHIFT and number buttons to select a preset station.

4 If you selected a DSR station, use MONO to select the MONO 1 or MONO 2 if necessary.

5 Press MEMORY again.
The MEMORY indicator goes out when you've finished one programme.

6 Repeat steps 2 to 5 for programmes 2 and 3.

7 Set PROGRAM to "ON."

8 Set your audio timer.
The tuner's power goes off.

Note

When the audio timer turns on the tuner, reception starts with the programme number following the last programme number displayed before turning off the unit.
The tuner advances in order to the next programme each time the audio timer turns the power on. If nothing is programmed at the next number, the tuner returns to 1.

If you don't plan on using the programme right away

Set PROGRAM to "OFF" in step 7. Then, when you want to use the programme, all you have to do is set PROGRAM to "ON" and set your timer.

Checking the programme contents

1 Set PROGRAM to SET.

2 Press CHECK repeatedly to display each of the memorized programmes.

If you want to check the actual reception of the programmed stations, turn PROGRAM on and turn POWER off and on. The preset stations will be received in the programmed order.

Notes

- If the setting of a programme is changed, the settings of the other programmes are all cleared. In this case, store the programmes again.
- When PROGRAM is set to SET, the display window changes to full display/full brightness automatically.
- The programmes remain until you change them. So, you can use the same programmes again.

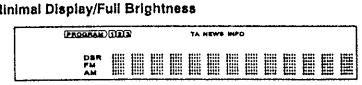
Changing the Display Mode

You can change the appearance of the display by pressing the DISPLAY MODE button. Each time you press DISPLAY MODE, the display mode switches as follows:

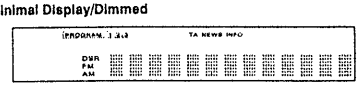
Full Display/Full Brightness

Full Display/ Dimmed

Minimal Display/Full Brightness



Minimal Display/Dimmed



Note

The display momentarily returns to the full display/full brightness mode when an operation button is pressed.

Station Names Broadcasting DSR Programmes

German programmes

Channel	Station name	Display
1	Bayern 4	BAYERN 4
2	S2 kultur	S2 Kulture-SWF/SDR (alternating)
3	Radio Bremen 2/3	BREMEN 2 [3]
4	Hessischer Rundfunk 2	SR 2/hr 2
5	Norddeutscher Rundfunk 3	NDR 3
6	Star*Sat	STAR*SAT
7	Deutschlandradio Köln	DLF or D-RADIO (alternating)
8	Westdeutscher Rundfunk 3	WDR3 or KOELN (alternating)
9	Deutschlandradio Berlin	D-RADIO or BERLIN (alternating)
10	SR 1 Europawelle Saar	SR1 SAAR
11	RPR 2	RPR 2
12	Klassik Radio	KLASSIK
13	Radio ffn	ffn
14	RadioRopa Info	RAD. ROPA
15	MDR Sputnik	Sputnik
16	Radio Xanadu	ENERGY

As of December 1994.

DIGit Super Radio in Switzerland (Cable 118 MHz)*

Channel	Station name	Display
1	Classic	Classic
2	Light	Light
3	International	Inter-CH
4	RSR 1 'La Première'	RSR-1ere
5	DRS 1	DRS 1
6	RSI 1 'Rete uno'	CH-Rete 1
7	RSR 3 'Couleur 3'	Couleur 3
8	DRS 3	DRS 3
9	RSI 3 'Rete tre'	CH-Rete 3
10	Radio Eviva	Eviva-CH
11	Blue Danube Radio	Danube-A
12	Hector Radio France	Hector-F
13	Euro Jazz	Eurojazz
14	Radio RAI Italia	Rai
15	BBC World Service BBC Multilingual Service	BBC W/S BBC M/S
16	Voice of America Europe	VOA EUR

As of December 1994.

* In Switzerland, "DSR" means "Digital Super Radio."

Remote Button Descriptions

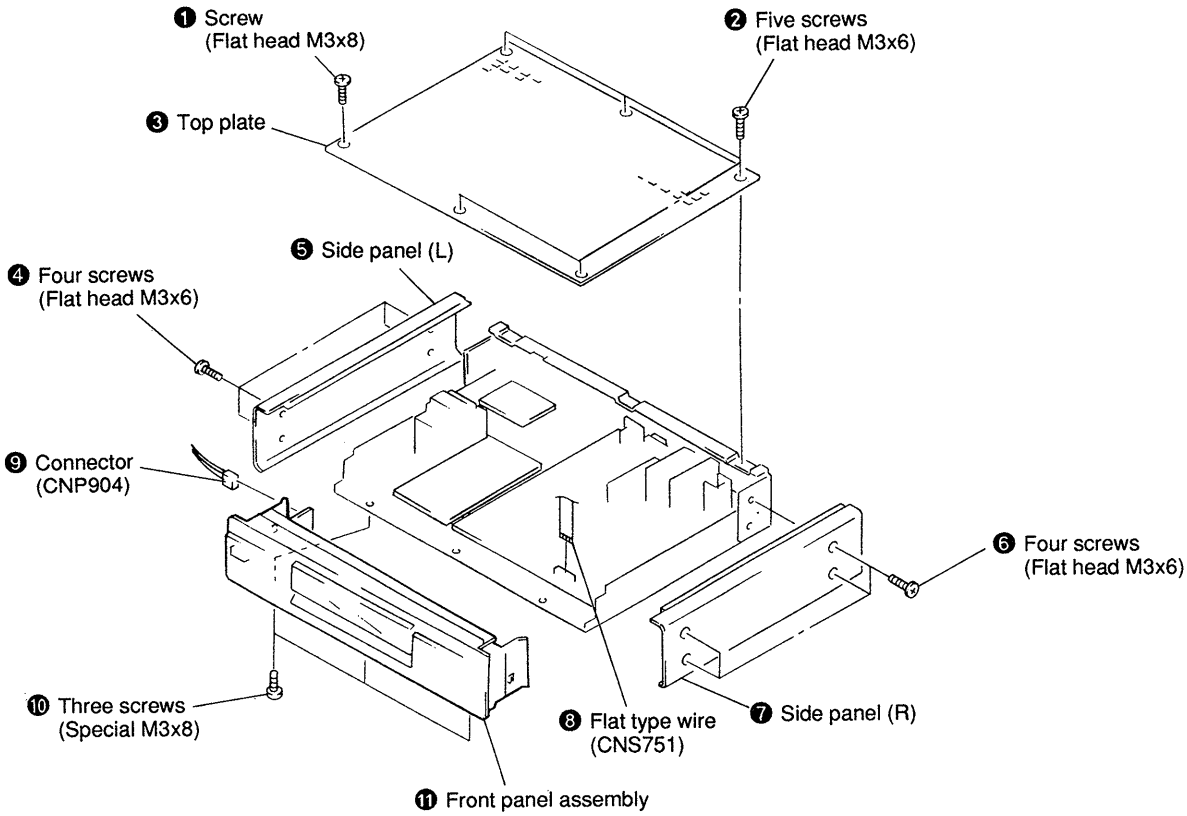
Remote Button	Band	Function
FM INPUT	FM	Selects either the CABLE or FM ANTENNA input
DSR (SATELLITE/CABLE)		Selects DSR satellite or DSR cable band tuning
FM		Selects FM band tuning
AM		Selects AM band tuning
SHIFT (+/–)		Switches presets (a, b, c, and d) and preset pages (A and B).
0-16	AM/FM	Used with SHIFT to select preset stations
	DSR	Used to access the stations available on a given DSR frequency
DISPLAY MODE		Changes display brightness (full/dimmed) and informaion (full/minimal)
MONO	FM	Selects FM STEREO or MONO
	DSR	Selects DSR MONO 1 or MONO 2
DISPLAY	AM	Switches between preset name* and frequency displays
	FM	Switches between preset name* or station name**, frequency, programme type**, radio text**, clock time**, and digital signal meter displays
	DSR	Switches between station name, frequency, programme type, and digital signal meter displays
NEWS		Selects the NEWS programme types for PTY search
AFFAIRS		Selects the AFFAIRS programme types for PTY search
INFO		Selects the INFO programme types for PTY search
SPORT		Selects the SPORT programme types for PTY search
EDUCATE		Selects the EDUCATE programme types for PTY search
DRAMA		Selects the DRAMA programme types for PTY search
CULTURE		Selects the CULTURE programme types for PTY search
SCIENCE		Selects the SCIENCE programme types for PTY search
VARIED		Selects the VARIED programme types for PTY search
POP M		Selects the POP M programme types for PTY search
ROCK M		Selects the ROCK M programme types for PTY search
M. O. R. M.		Selects the M. O. R. M. programme types for PTY search
LIGHT M		Selects the LIGHT M programme types for PTY search
CLASSICS		Selects the CLASSICS programme types for PTY search
OTHER M		Selects the OTHER M programme types for PTY search
UNDEFINED		Selects the UNDEFINED programme types for PTY search
CH/PRESET (+/–)	AM/FM	Selects preset stations.
	DSR	Selects stations available on a given DSR frequency
EON (TA/NEWS/INFO)	FM/DSR	Chooses programme types for EON standby
BALANCE (SPEECH/MUSIC)	DSR	Adjusts the speech/music balance of DSR broadcasts
TUNING (+/–)		Changes frequencies for manual tuning

* Only for presets that have names.
** Only for FM RDS stations

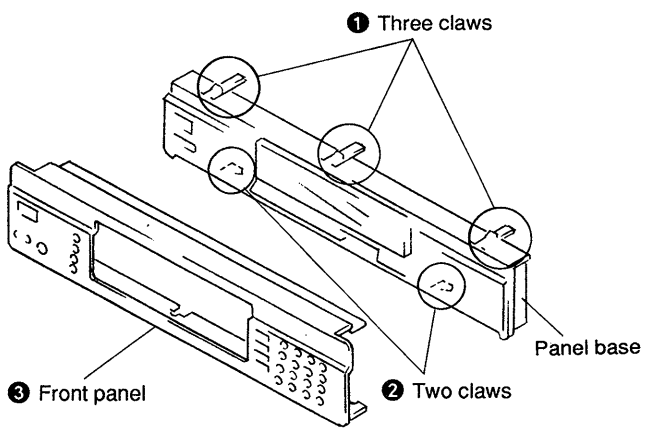
SECTION 2
DISASSEMBLY

Note : Follow the disassembly procedure in the numerical order given.

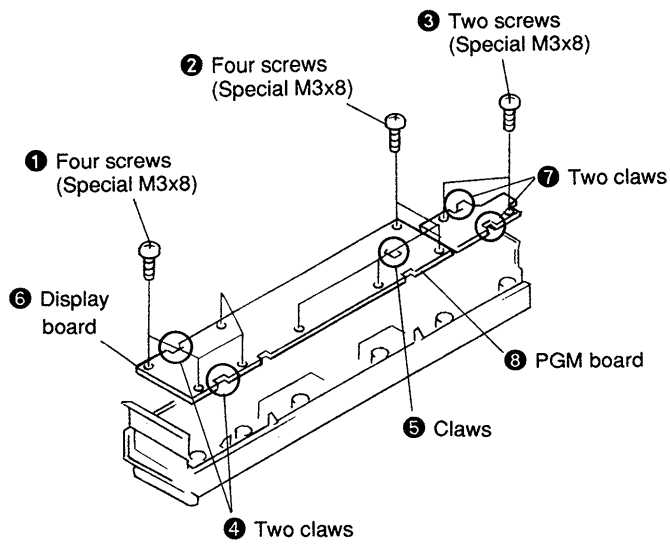
2-1. FRONT PANEL ASSEMBLY



2-2. FRONT PANEL



2-3. DISPLAY AND PGM BOARD



SECTION 3
TEST MODE

Storing FM Stations Automatically in Alphabetical Order ("Auto-betical")

With "Auto-betical select" you can automatically store up to 32 FM stations in alphabetical order without redundancy. For Radio Data System (RDS) stations, the tuner first checks for stations broadcasting the same programme, then stores only the one with the clearest signal. The selected RDS stations are sorted alphabetically by their Programme Service name, then assigned a two-character preset code (For more details on RDS, see page 8.)
Regular FM stations are assigned two-character preset codes and stored after the RDS stations. If you want to store FM, AM, or DSR stations one by one, follow the procedures on pages 7.

1. Turn the power off.

2. Press POWER while holding down MEMORY.
   The tuner scans and stores all the FM and FM RDS stations in the broadcast area.

Notes

- If you move to another area, do this procedure again to store stations in you new area.
- The following settings are stored along with the station :
  INPUT ATT : OFF
  IF BAND : WIDE
  MONO/STEREO : STEREO
- If you move the aerial after storing stations using "auto-betical select," the stored settings may no longer be valid. If this happens, store the stations again.
- Preset stations and other items stored in the tuner's memory may be cleared if the power is left off for more than 2 weeks in a row. If this happens, make the settings again.

The basic operation of check modes is performed by the combination of the following keys.

- **Combination of keys**

  [4], [5], [6] + [POWER] ON → Key check mode
  [7], [8], [9] + [POWER] ON → FL check mode
  [10], [11], [12] + [POWER] ON → Electrical adjustment frequency mode
  [13], [14], [15] + [POWER] ON → RAM clear mode (Set at shipment)
  [MEMORY] + [POWER] ON → Auto-betical select start mode
  [MENU] + [POWER] ON → Language select mode

- **Mode operations :**

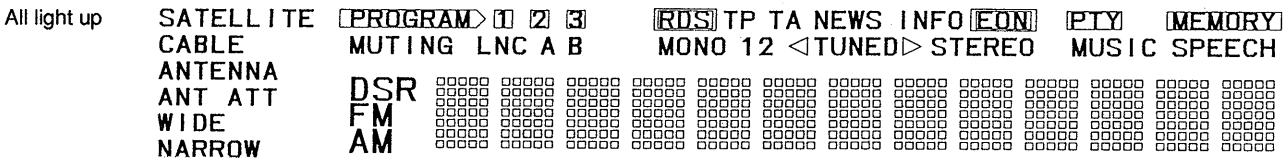
  - **Key check mode**

    ① "31" appears on the display at the beginning. (The number decreases by one each time the key is pressed. The number does not decrease even if one key is pressed two times or more.)
    ② When all keys are pressed, the display disappears once and the most recent updated time (month, day, hour) of the software appears for two seconds. (This date is used for checking the version of software at shipment. This is not necessary for usual operations.) After that, the electrical adjustment frequency is automatically preset.

- **FL check mode**

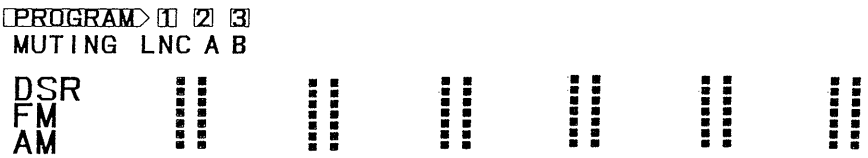
① All displays light up.

All light up



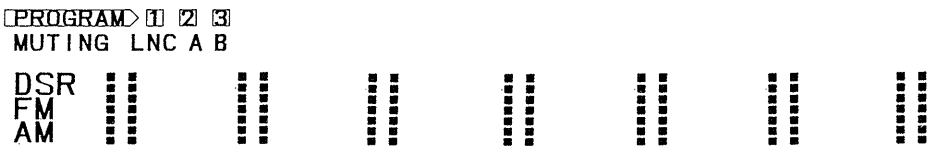
② When any of numerical keys [1] to [16] are pressed, bridge check pattern 1 appears.

Check pattern 1



③ When any of numerical keys [1] to [16] are pressed, bridge check pattern 2 appears.

Check pattern 2



④ When any of numerical keys [1] to [16] are pressed, the display disappears once and the part No. of the microcomputer (IC701) appears for two seconds. After that, the electrical adjustment frequency is automatically preset. If a pin of the display tube is not soldered correctly, a part of the display does not light up. If there is a bridge, a different bridge check pattern appears.

- **Electrical adjustment preset**

A1	FM 87.5MHz
A2	FM 88.0MHz
A3	FM 90.0MHz
A4	FM 94.0MHz
A5	FM 96.0MHz
A6	FM 97.0MHz
A7	FM 98.0MHz
A8	FM 99.0MHz
A9	FM 100.0MHz
A10	FM 106.0MHz
A11	FM 108.0MHz
A12	AM 531kHz
A13	AM 603kHz
A14	AM 999kHz
A15	AM 1404kHz
A16	AM 1602kHz
B1 ⌇ B16	FM 87.5MHz

a	DSR CABLE	118.0MHz
b	DSR CABLE	132.0MHz
c	DSR CABLE	310.0MHz
d	DSR SATELLITE	1150.0MHz

- **RAM CLEAR (Set at shipment)**

A1 ⌇ B16	FM 87.5MHz

a	DSR CABLE	118.0MHz
b	DSR CABLE	132.0MHz
c	DSR CABLE	310.0MHz
d	DSR SATELLITE	1150.0MHz

SECTION 4
ELECTRICAL ADJUSTMENTS

- Adjustment should be performed after setting the electrical adjustment frequency set mode of the test mode.
- Refer to Adjustment Location on page 18.

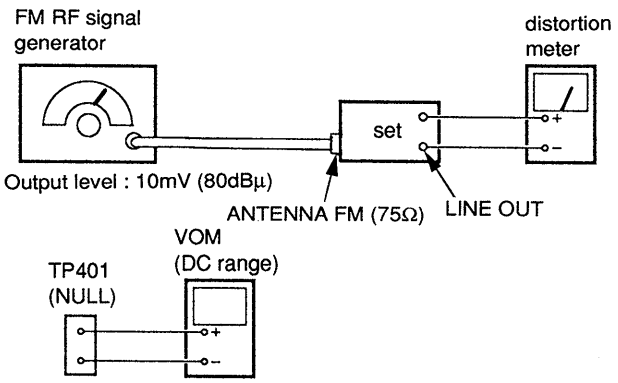
FM SECTION

- Standard Setting of FM Stereo RF Signal Generator.

STANDARD SIGNAL

Carrier frequency : 98 MHz
Modulation : Audio 1kHz, 75 kHz deviation

FM Discriminator Adjustment (NULL and Distortion)

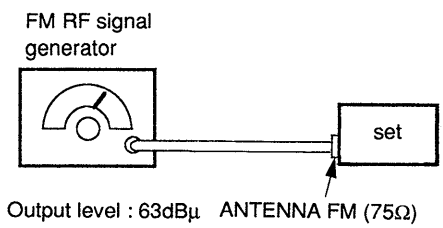


Procedure :

1. Press [7] button to display FM 98.00 MHz A7.
2. Adjust T403 for 0V reading on the VOM. ..... NULL
3. Adjust T404 for a minimum reading on the distortion meter. ..... Distortion
4. Repeat the adjustments of 2 and 3 several times.

Note : When replacing the ceramic filter, perform this alignment.

FM Signal Level Adjustment

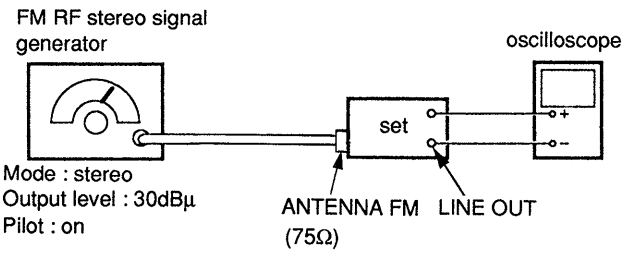


Procedure :

1. Press [DISPLAY] button to display SIG ▯▯dB A7.
2. Adjust RV401 to display 60dBμ.

Note : ▯▯ means a display before adjustment.

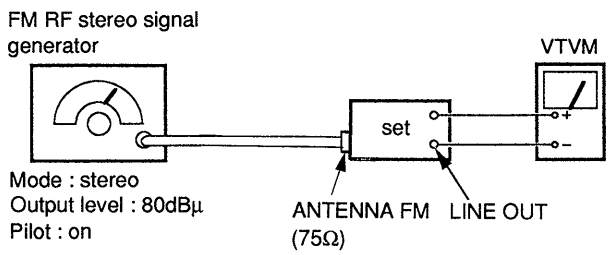
FM Muting Level Adjustment



Procedure :

1. Press [7] button to display FM 98.00 MHz A7.
2. Adjust RV402 to the place where TUNED and STEREO of the display tube light and the frequency shows.

FM Stereo Separation Adjustment

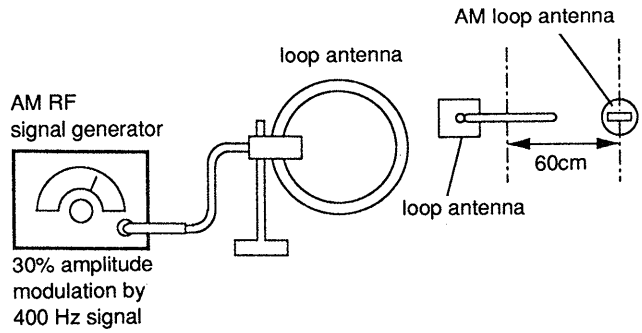


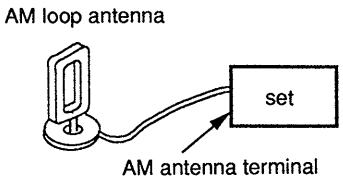
Procedure :

FM stereo signal generator output channel	VTVM connection	VTVM reading (dB)
L-CH	L-CH	Ⓐ
R-CH	L-CH	Ⓑ Adjust RV801 for minimum reading.
R-CH	R-CH	Ⓒ
L-CH	R-CH	Ⓓ Adjust RV801 for minimum reading.

L-CH Stereo separation : Ⓐ—Ⓑ
(A and B should be more than 40dB)
R-CH Stereo separation : Ⓒ—Ⓓ
(C and D should be more than 40dB)
The separations of both channels should be equal.

AM SECTION





AM Signal Level Adjustment

Procedure :

1. Set SSG output level so that antenna input level of the set becomes 60dBμ/m.
2. Press [14] button to display AM 999 kHz A14.
3. Adjust RV501 to the place where TUNED of the display tube lights.

DSR SECTION

Note : Switch the memory to the preset for electrical adjustments in advance before adjustment. Perform the FL check mode (see the page 12) or in the way below. (As the past data of the memory is written over, the contents of the memory should be noted down and preset them again after the end of adjustments.)

Preset mode for electrical adjustments
Press [10], [11], [12] and [POWER] at once.

Master Clock PB VCO coil Adjustment

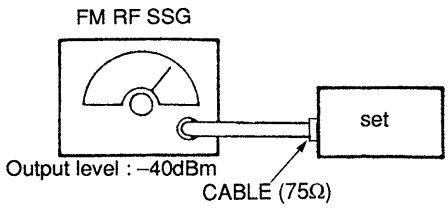
Input signal : No input

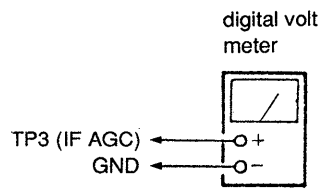
Procedures :

1. Press [SHIFT] button to display "a" at the left most display tube.
2. Press [1] button to display "DSR 118.0 MHz a 1".
3. Connect the digital volt meter to TP8 (D VCO) of the main board.
4. Adjust L301 so that DC voltage becomes 2.5 ± 0.2 Vdc.

QPSK AGC Adjustment

Carrier frequency : 118 MHz
Modulation : no modulation



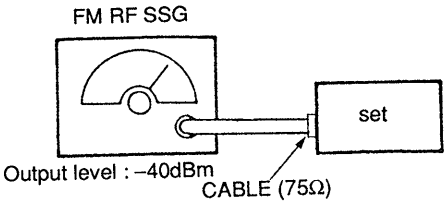


Procedures :

1. Press [SHIFT] button to display "a" at the left most display.
2. Press [1] button to display "DSR 118.0 MHz a 1".
3. Connect the digital volt meter to TP3 (IF AGC) of the main board.
4. Adjust RV101 so that DC voltage becomes 2.3 ± 0.1 Vdc.

DSR Signal Adjustment

Carrier frequency : 118 MHz
Modulation : no modulation



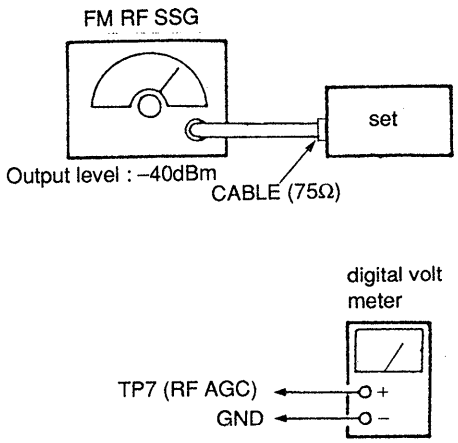
Procedure :

1. Press [DISPLAY] button to display "SIG▯▯ a 1".
2. Adjust RV102 so that "69" appears.

Note: ▯▯ stands for the value before adjustment.

DSR RF AGC Check

Carrier frequency : 118 MHz
Modulation : no modulation

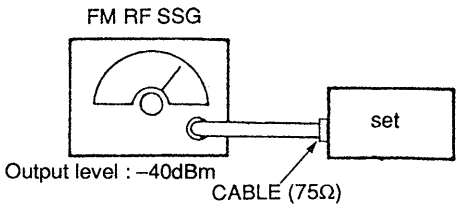


Procedures :

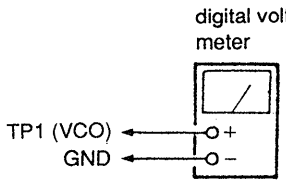
1. Press [SHIFT] button to display "a" at the left most display.
2. Press [1] button to display "DSR 118.0 MHz a 1".
3. Connect the digital volt meter to TP7 (RF AGC) of the main board.
4. Make sure that the voltage value when input signal is less than in the condition of no signal.

QSPK 40 MHz VCO coil Adjustment

Carrier frequency : 118 MHz
Modulation : no modulation



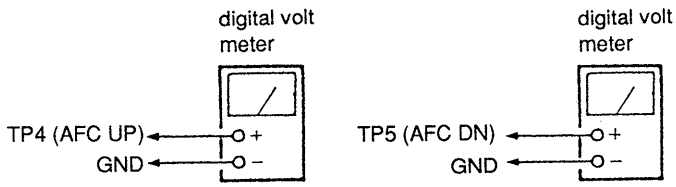
Step 1.



Procedure :

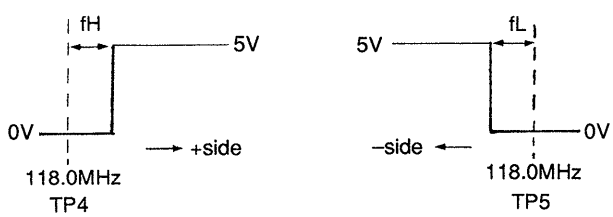
1. Set RV103 of the main board to the mechanical center.
2. Connect the digital volt meter to TP1(VCO) of the main board.
3. Adjust L104 so that DC voltage becomes 6.0 ± 0.2 Vdc.

Step 2.

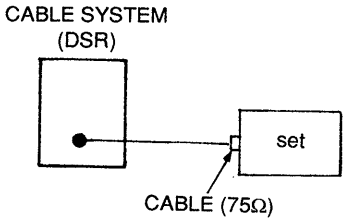


Procedure :

1. Adjust the receiving frequency to 118.0MHz.
2. Connect the digital voltmeter to TP4 (AFC UP) of the main board.
3. Press [+] key and move the frequency to the + side until the value of the digital voltmeter becomes approx. 5V, make sure the frequency then. The difference between this frequency and 118.0 MHz is named fH.
4. Connect the digital voltmeter to TP5 (AFC DN) of the main board.
5. Press [–] key and move the frequency to the – side until the value of the digital voltmeter becomes approx. 5V, make sure the frequency then. The difference between this frequency and 118.0MHz is named fL.
6. Adjust L104, repeat procedures 1 to 5 until the fH will be equal to fL (fH = fL).



QPSK Offset Adjustment



Input signal : broadcast frequency of receivable cable area
(50 — 470MHz)

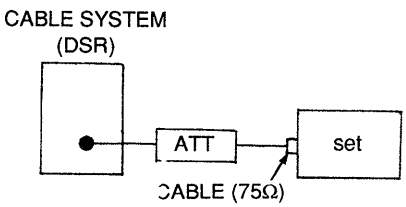
Procedure :

1. Receive a broadcast frequency. (TUNED lights and names of broadcast stations are displayed.)
2. Press [+] key and move the frequency to the + side, and make sure the frequency which the display TUNED is disappeared. The difference between this frequency and the broadcast frequency is named fH.
3. Press [−] key and move the frequency to the − side, and make sure the frequency which the display TUNED is disappeared. The difference between this frequency and the broadcast frequency is named fL.
4. Adjust RV103, repeat procedures 1 to 3 until the fH will be equal to fL (fH = fL).

Reception area	Frequency	Origin
Germany	CABLE 118 MHz	Germany
Switzerland	CABLE 118 MHz	Switzerland
	CABLE 310 MHz (or 132 MHz)	Germany
Austria	CABLE 118 MHz	Germany
Germany and surrounding areas	SATELLITE (1st IF) 1,150 ± 2 MHz (Kopernikus)	Germany

As of December 1994

Decoder Bit Clock Adjustment



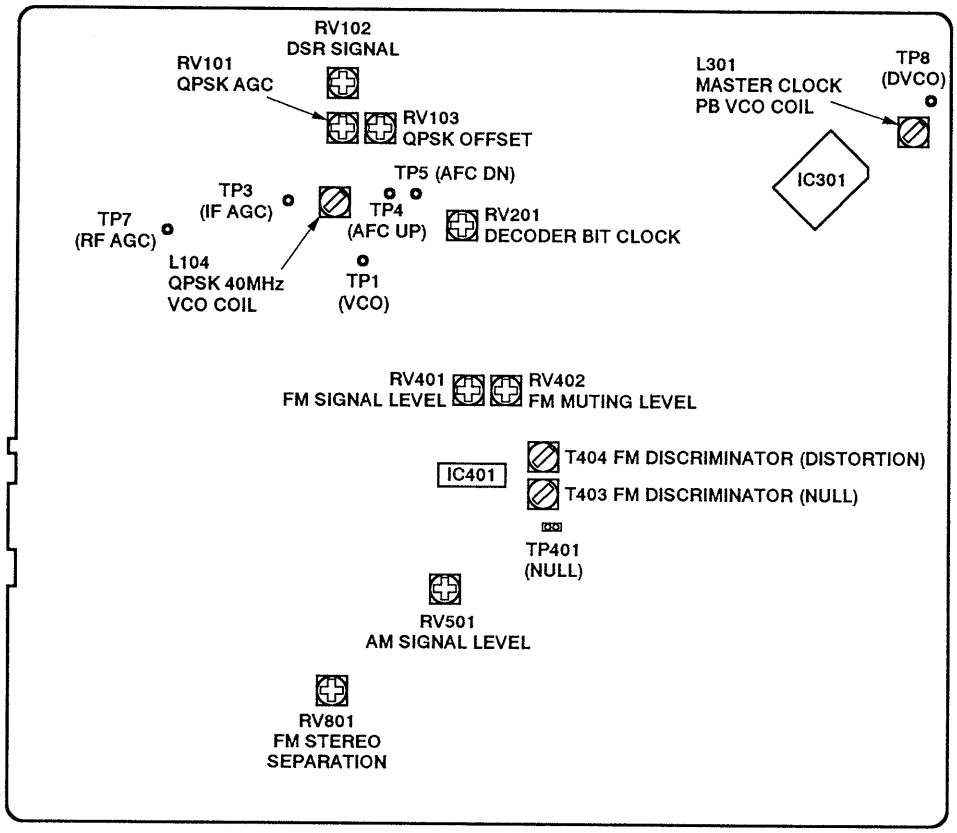
Input signal : broadcast frequency of receivable cable area
(50 — 470MHz)

Procedure :

1. Receive a broadcast frequency, reduce the radio wave by an attenuator and distort the sound. (Make much noise increase.)
2. Adjust RV201 to minimize the sound distortion.

Adjustment Location

【MAIN BOARD】 COMPONENT SIDE



SECTION 5
DIAGRAMS

5-1. IC PIN FUNCTIONS

- **IC701 μPD78058GC (SYSTEM CONTROL)**

Pin No.	Pin Name	I/O	Function
1	A. S	I	FM/AM signal level meter input (A/D)
2	TUNED	I	Tuned detection (L: tuned)
3	IF BAND	O	FM IF band (H: narrow)
4	AVss	–	GND of D/A converter
5	STEREO	I	FM stereo detection (L: stereo)
6	FL. RESET	O	FL tube reset. Reset when low.
7	AVREF	I	D/A converter reference voltage
8	S. DATA	I	DSR special service bit data
9	——	O	Not used.
10	S. CLK	I	DSR special service bit clock
11	OVER LOAD	I	LNC over load detection (H: overload)
12	FL. DATA	O	FL tube output data
13	FL. CLK	O	FL tube output clock
14	——	I	Not used. (GND)
15	FL. LAT	O	FL tube latch
16	DI	I	PLL input data
17	DATA	O	PLL output data
18	CLK	O	PLL output clock
19	ANT	O	FM/CAB input switching (H: cable)
20	ATT	O	FM ATT (H: att)
21	F/A LAT	O	FM/AM PLL latch
22	SAT LAT	O	SAT PLL latch
23	CABLE LAT	O	CAB PLL latch
24	LNC 14/18V	O	LNK 14/18V (L: 14V)
25	——	O	Not used.
26	LOOP CUT	O	Loop cut
27	AFC UP	I	AFC up
28	AFC DOWN	I	AFC down
29	——	O	Not used.
30	$\overline{\text{SYLN}}$	I	DSR decoder sync detection
31	MODE0	O	DSR mode select *1 (Refer to page 21)
32	MODE1	O	
33	VSS	–	System ground
34	$\overline{\text{UPMU}}$	O	Decoder muting (H: mute)
35	RESET	O	Decoder reset (H: reset)
36	——	–	Not used. (GND)
37	LNC ON/OFF	O	LNC on/off (L: on)
38	——	O	Not used. (GND)
39	——	O	
40	AF MUTE	O	AF muting (L: on)

Pin No.	Pin Name	I/O	Function
41	PA	O	DSR channel select *2 (Refer to page 21)
42	PB	O	
43	PC	O	
44	PD	O	
45	——	–	Not used.
46	INT	O	DAC sync reset (Sync again at rising.)
47	DF LAT	O	DAC latch
48	INAF	I	DAC async detection
49	D. MUTE	O	Digital muting
50	ATT	O	DAC data
51	SHIFT	O	DAC clock
52	——	–	Not used.
53	——	–	
54	——	–	
55	——	–	
56	——	–	
57	——	–	
58	——	–	
59	DSR/$\overline{FM}$	O	DSR/FM power switching (H: DSR)
60	RES	O	Microcomputer reset
61	SWND	O	DSR special service window
62	POWER	I	Power
63	——	–	Not used.
64	——	–	
65	REMOCON	I	Remote control input
66	RD CLK	I	RDS clock input
67	RD. DATA	I	RDS data
68	VDD	–	+5V (V_{DD})
69	X2	I	Oscillator input/output
70	X1	O	
71	IC	–	GND
72	XT2	–	Not used.
73	XT1	–	Not used. (GND)
74	AVDD	–	A/D power supply
75	AVREFO	–	A/D reference voltage
76	KEY0	I	Key input (A/D)
77	KEY1	I	
78	KEY2	I	
79	PGM	I	Program switch (A/D)
80	D. S	I	DSR signal level (A/D)

*1 DSR MODE SELECT

MODE 0	MODE 1	OPERATION
0	0	STEREO
1	0	MONO (R-CH)
0	1	MONO (L-CH)

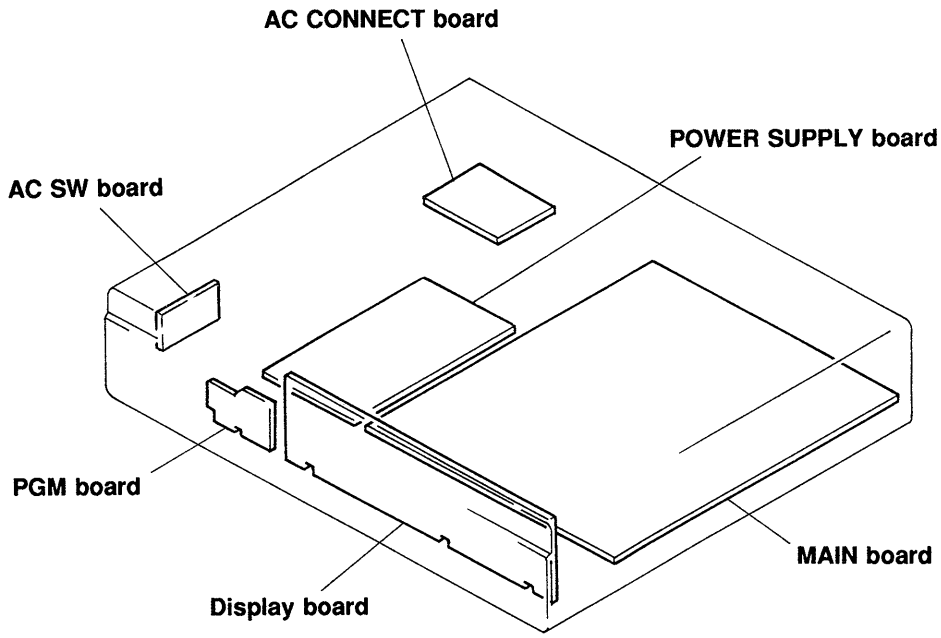
0: LOW LEVEL
1: HIGH LEVEL

*2 DSR CHANNEL SELECT

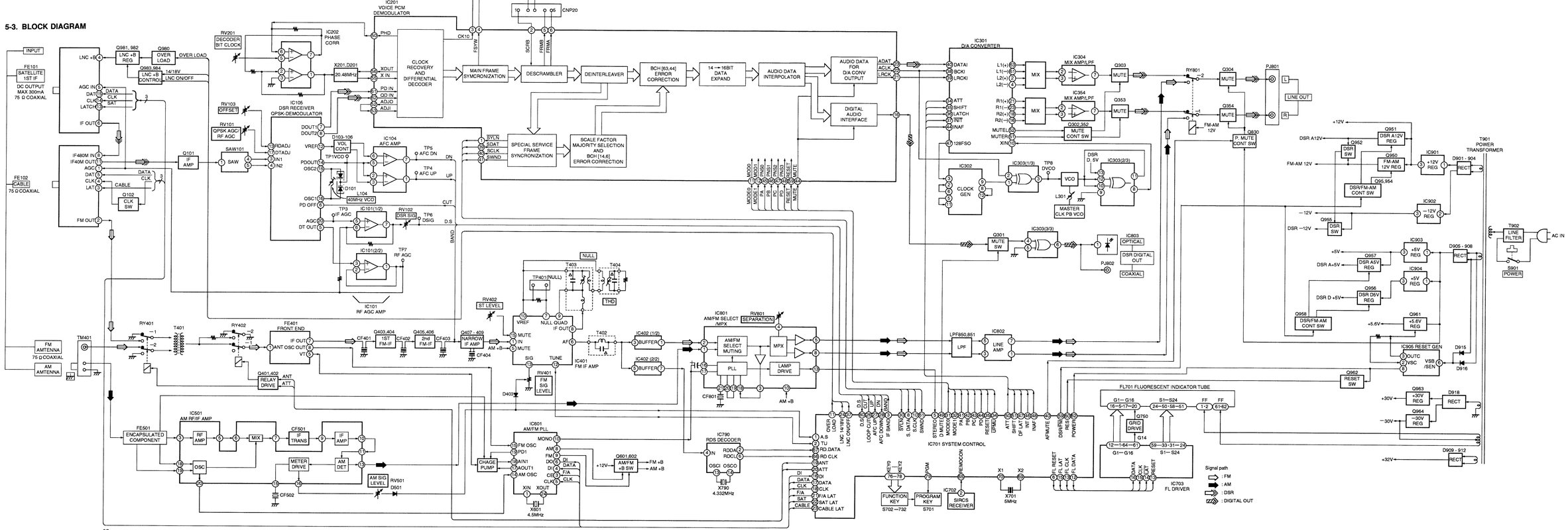
PA	PB	PC	PD	CHANNEL
0	0	0	0	1
1	0	0	0	2
0	1	0	0	3
1	1	0	0	4
⋮	⋮	⋮	⋮	⋮
0	0	1	1	13
1	0	1	1	14
0	1	1	1	15
1	1	1	1	16

0: LOW LEVEL
1: HIGH LEVEL

5-2. CIRCUIT BOARDS LOCATION



5-3. BLOCK DIAGRAM



5-4. PRINTED WIRING BOARD — TUNER/POWER SECTION —

• See page 22 for Circuit Boards Location.

• **Semiconductor Location**

Ref. No.	Location	Ref. No.	Location
D101	D-9	IC401	F-7
D103	C-8	IC402	G-5
D104	C-8	IC501	H-7
D105	C-8	IC601	G-10
D106	C-8	IC701	G-2
D201	B-7	IC790	I-5
D202	B-7	IC801	I-10
D301	C-2	IC802	I-10
D401	F-11	IC803	A-12
D402	G-11	IC901	H-16
D403	E-7	IC902	H-14
D501	G-7	IC903	H-17
D701	I-2	IC904	H-18
D702	I-2	IC905	G-18
D703	I-2		
D801	J-9	Q101	C-10
D802	J-11	Q102	D-10
D803	J-11	Q301	B-2
D804	J-11	Q302	C-2
D901	G-15	Q303	F-2
D902	G-15	Q304	I-12
D903	G-16	Q352	C-2
D904	G-16	Q353	F-3
D905	G-17	Q354	H-12
D906	G-17	Q401	E-11
D907	G-17	Q402	E-11
D908	G-17	Q403	E-9
D909	G-20	Q404	E-9
D910	G-19	Q405	E-8
D911	G-20	Q406	E-8
D912	G-19	Q407	E-8
D913	I-20	Q408	E-8
D914	I-19	Q409	F-8
D915	G-17	Q601	H-8
D916	G-17	Q602	H-8
D917	J-20	Q830	J-11
D918	G-19	Q950	J-16
D919	G-19	Q951	J-16
D980	C-11	Q952	I-15
D981	C-11	Q953	I-16
D982	C-11	Q954	I-16
D983	C-10	Q955	I-15
D984	C-10	Q956	J-19
		Q957	J-17
IC101	B-10	Q958	J-18
IC102	E-10	Q961	H-18
IC104	C-8	Q962	G-19
IC105	C-9	Q963	H-20
IC201	C-6	Q964	H-19
IC202	C-7	Q980	B-10
IC301	C-3	Q981	B-11
IC302	A-3	Q982	C-11
IC303	A-2	Q983	C-10
IC304	E-2	Q984	C-10
IC354	E-3		

Note:

- o—— : parts extracted from the component side.
- ■ : parts mounted on the conductor side.
- ▨ : Pattern from the side which enable seeing.

【MAIN BOARD】

【AC SWITCH BOARD】

【AC CONNECT BOARD】

【POWER SUPPLY BOARD】

5-5. SCHEMATIC DIAGRAM — TUNER/POWER SECTION —

• See page 19 for IC Pin Function. (IC701)
• See page 36 for IC Block Diagrams.

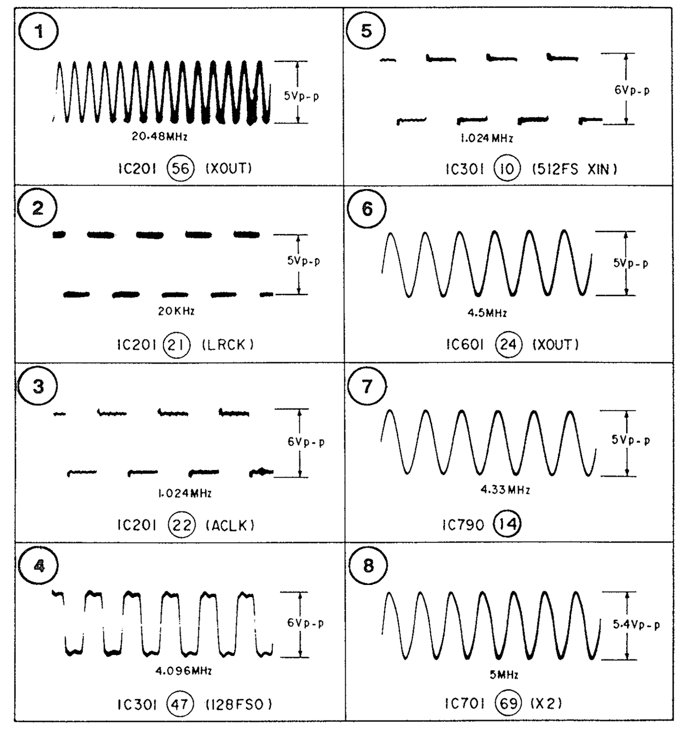
[MAIN BOARD]
IC101 RF AGC AMP
IC102 +9V REG
IC104 AFC AMP
IC105 DSR RECEIVER QPSK-DEMODULATOR
IC201 VOICE PCM DEMODULATOR
IC202 PHASE CORR
IC301 DIGITAL FILTER, D/A CONVERTER
IC302 32FS/128FS GEN
IC303 512FS GEN
IC304, IC354 MIX AMP&LPF
IC401 FM IF AMP
IC402 BUFFER
IC501 AM RF/IF AMP
IC601 AM/FM PLL
IC701 SYSTEM CONTROL
IC790 RDS DECODER
IC801 AM/FM-SELECT FM-MPX
IC802 LINE AMP
IC803 DSR DIGITAL OUT OPTICAL
Q981, 982 LNC+B REG
Q980 OVER LOAD
Q983 14/18V SW
Q984 LNC ON/OFF SW
Q101 IF AMP
Q403, 404 1st FM-IF
Q405, 406 2nd FM-IF
Q409-409 NARROW IF AMP
Q401, 402 RELAY DRIVE
Q601, 602 AM/FM +B SW
Q302, 352 MUTE SW
Q303, 353 MUTE
Q830 MUTE SW
Q304, 354 MUTE
FE101 SATELLITE 1ST IF DC OUTPUT MAX 300mA 0V/14V/18V
75Ω COAXIAL
INPUT
FM ANTENNA
AM ANTENNA
LINE OUT
DSR DIGITAL OUT COAXIAL
DISPLAY BOARD CNS701 (Page 39)
[AC SWITCH BOARD]
[AC CONNECT BOARD]
T901 POWER TRANSFORMER
AC IN
[POWER SUPPLY BOARD]
D901-904 RECT
IC901 +12V REG
IC902 -12V REG
IC903 IC904 +5V REG
IC905 RESET GEN
Q952, 955 REG SW
Q950, 951 +12V REG
Q953, 954 DSR/FM, AM SW
Q956, 957 DSR +5V REG
Q958 DSR/FM, AM SWITCH
Q961 +5.6V REG
Q962 RESET SW
Q965 +30V REG
Q964 -30V REG
D905-908 RECT
D918 RECT
D919 RECT
D909-912 RECT

NOTE
- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- △ : internal component.
- [resistor symbol] : nonflammable resistor.
- [box] : panel designation.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

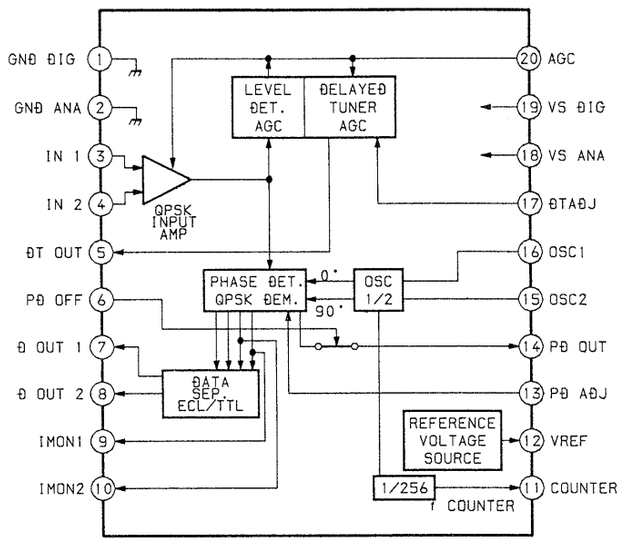
- ——— : B+ Line.
- – – – : B- Line.
- [box] : adjustment for repair.
- Voltages and waveforms are dc with respect to ground under no-signal conditions.
  no mark: DSR mode
  ( ) : FM mode
  < > : AM mode
  * : can not be measured.
- Voltages are taken with a VOM (Input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ⇨ : FM
  ➡ : AM
  ⇨» : DSR
  ⇨» : digital out

• Waveforms

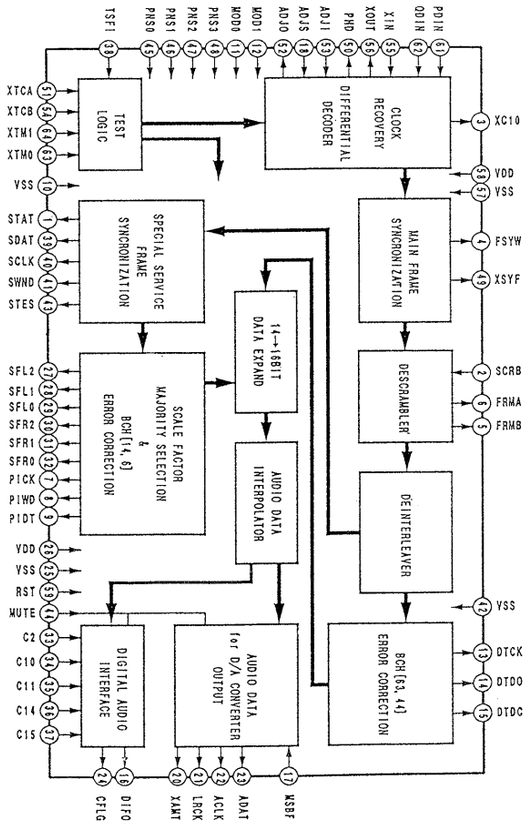


5-6. IC BLOCK DIAGRAMS

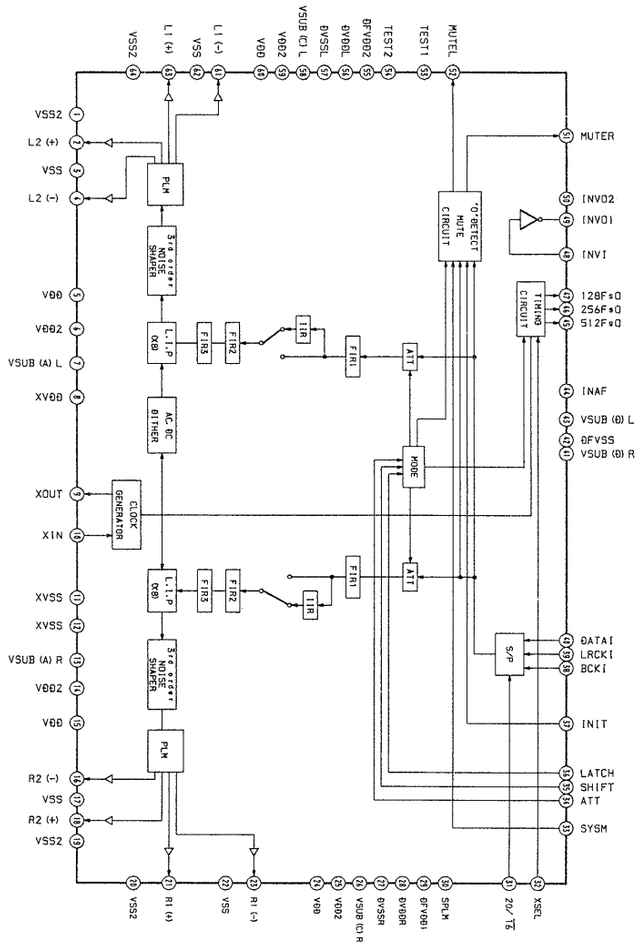
IC105 SDA6310X



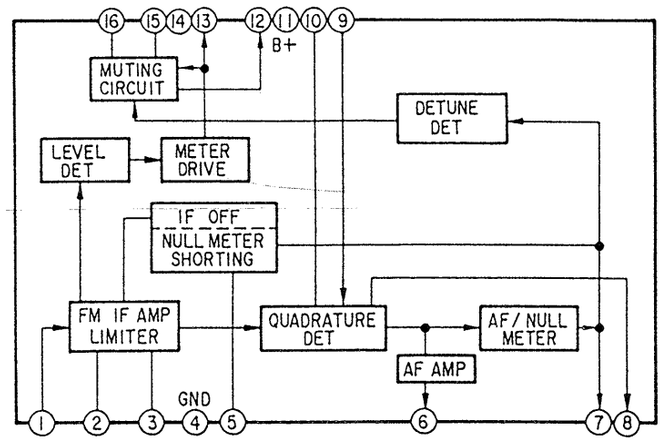
IC201 CXD8423Q



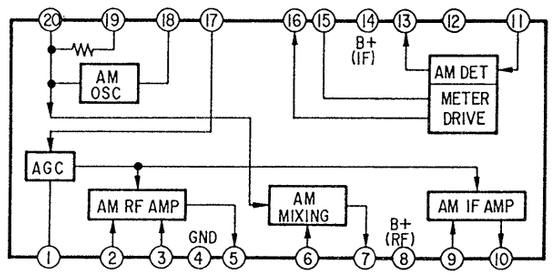
IC301 CXD8505Q



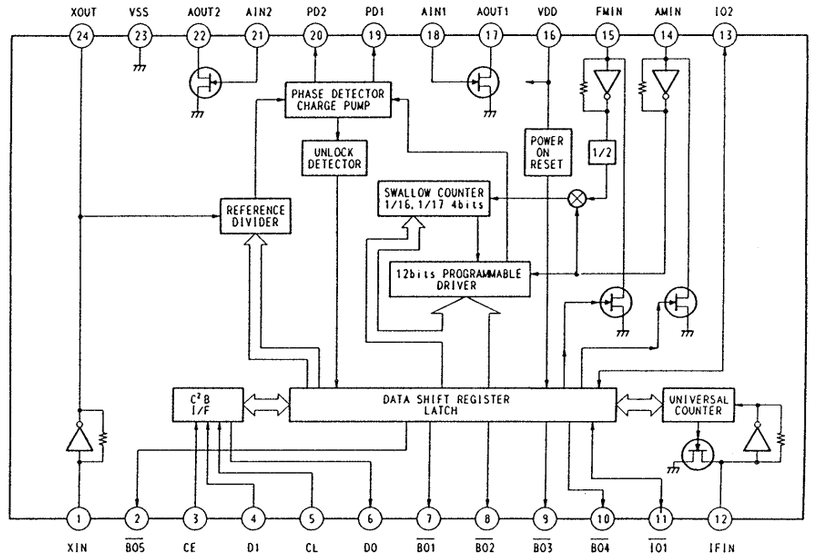
IC401 LA1235



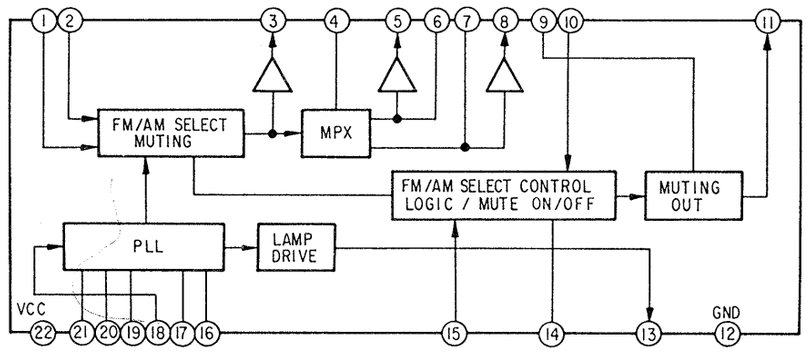
IC501 LA1245



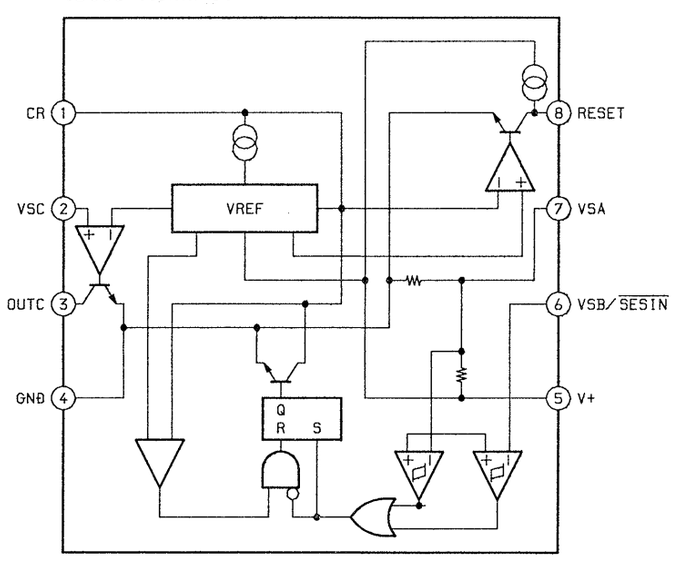
IC601 LC72130



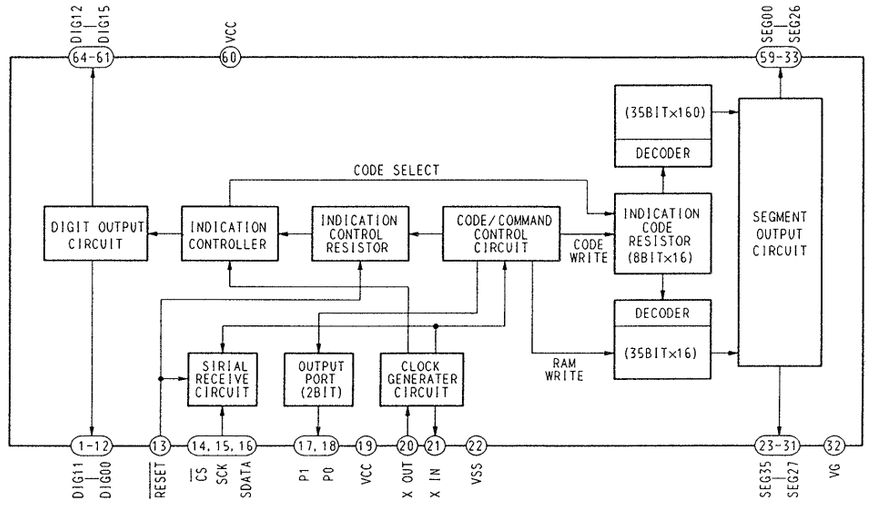
IC801 LA3401



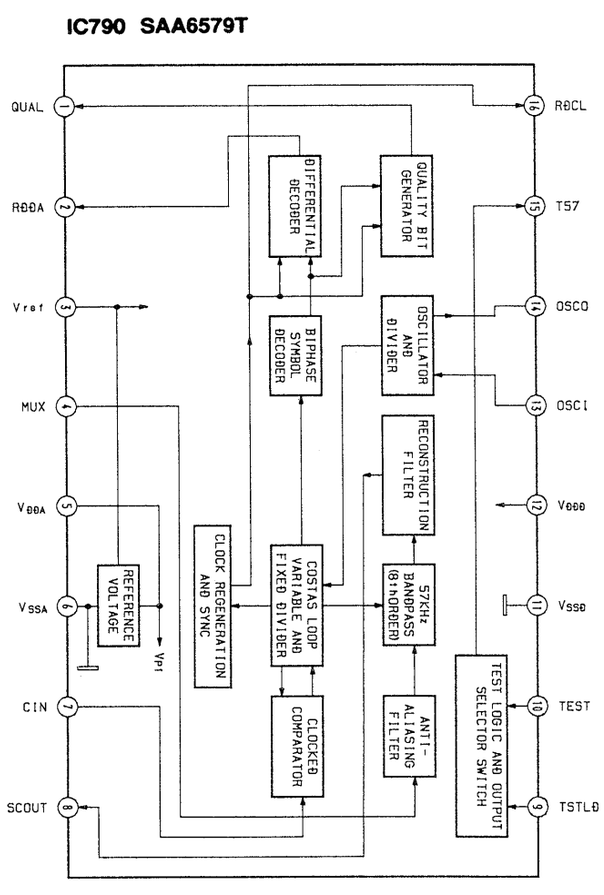
IC905 NJM2103D



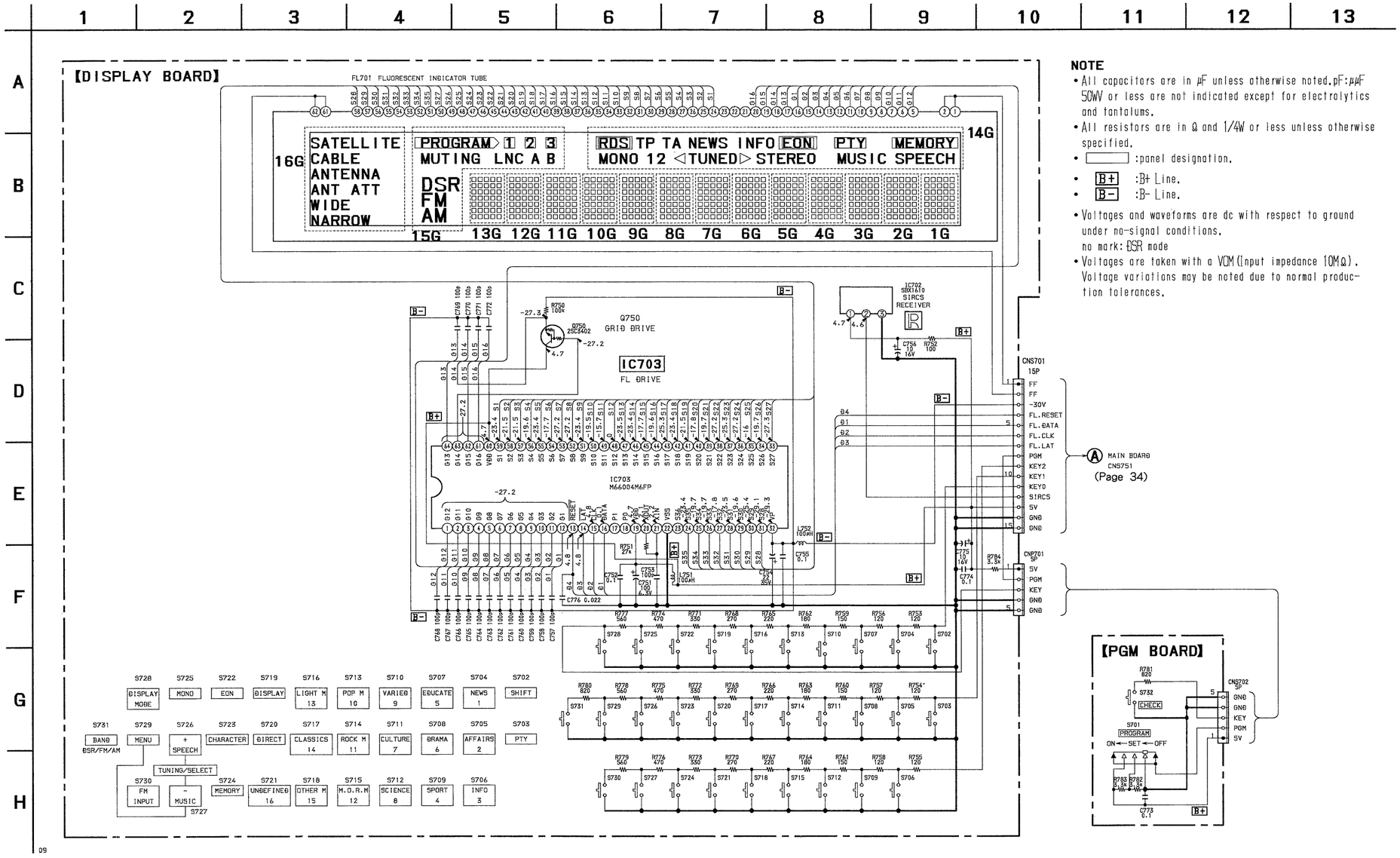
IC703 M66004M6FP



IC790 SAA6579T



5-7. SCHEMATIC DIAGRAM — DISPLAY SECTION —



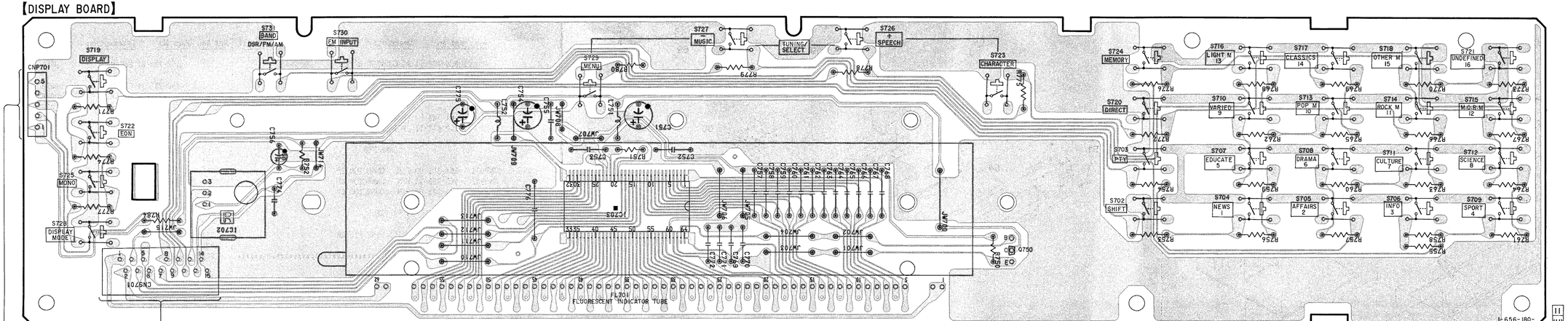
NOTE

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- ▭ : panel designation.
- B+ : B+ Line.
- B- : B- Line.
- Voltages and waveforms are dc with respect to ground under no-signal conditions.
  no mark: DSR mode
- Voltages are taken with a VOM (Input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.

5-8. PRINTED WIRING BOARD — DISPLAY SECTION —

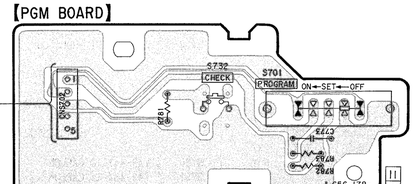
• See page 22 for Circuit Boards Location.

【DISPLAY BOARD】



A MAIN BOARD CNS751 (Page 28)

【PGM BOARD】



Note:

- ○——○ : parts extracted from the component side.
- ■ : parts mounted on the conductor side.
- ▨ : Pattern from the side which enable seeing.

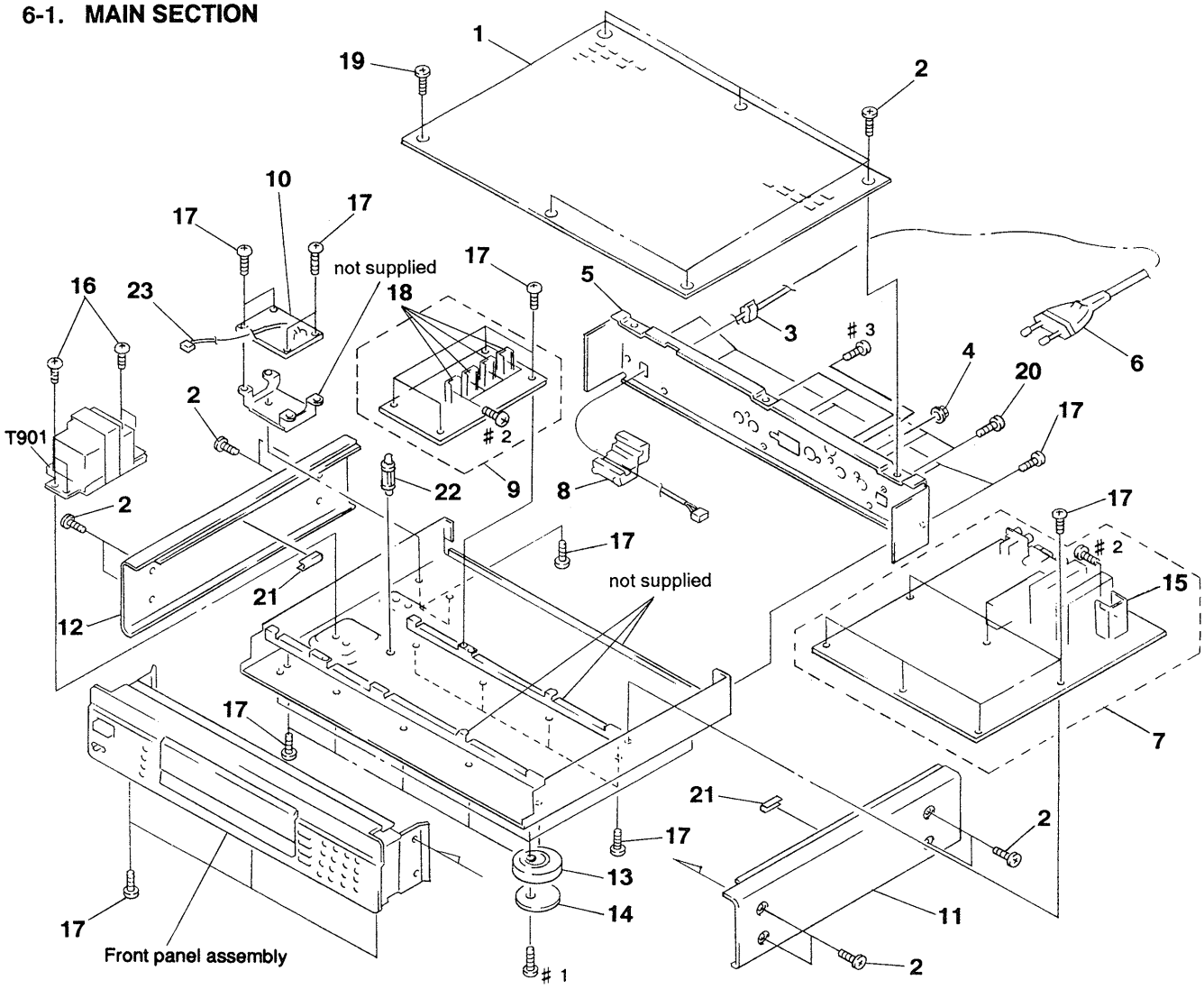
SECTION 6
EXPLODED VIEWS

NOTE:

- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Color Indication of Appearance Parts Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ Parts color ↑ Cabinet's color
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.

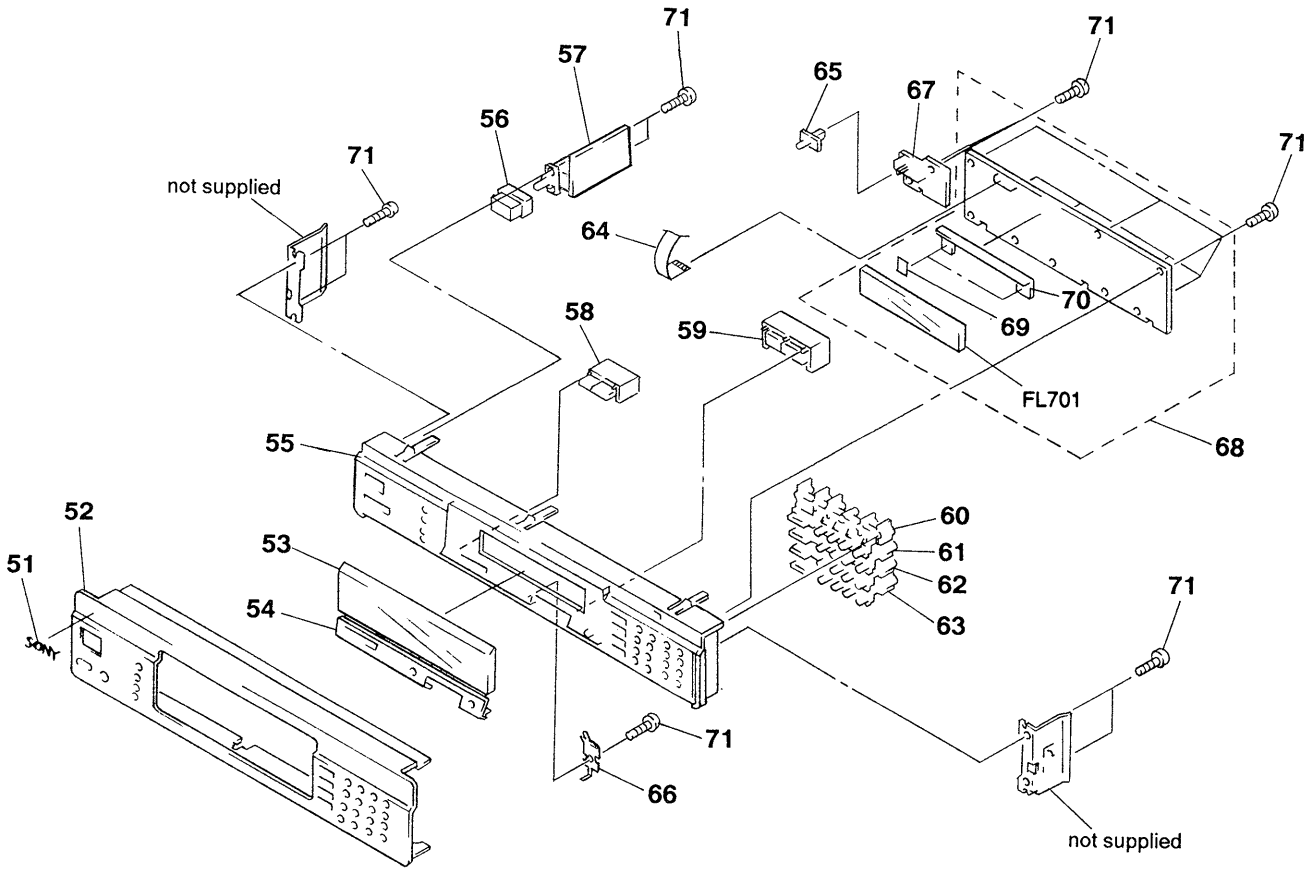
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

6-1. MAIN SECTION



Ref. No.	Part No.	Description	Remark
1	4-970-687-01	PLATE, TOP (BLACK)	
1	4-970-687-11	PLATE, TOP (GOLD)	
2	4-924-242-11	SCREW (M3X6), FLAT HEAD (BLACK).. (BLACK)	
2	4-924-242-61	SCREW (M3X6), FLAT HEAD (SILVER).. (GOLD)	
* 3	3-703-244-00	BUSHING (2104), CORD	
4	3-682-691-00	NUT, WASHER HEXAGON	
* 5	4-973-152-01	PANEL, BACK	
⚠6	1-574-383-11	CORD, POWER	
* 7	A-4377-737-A	MAIN BOARD, COMPLETE	
8	1-543-827-11	CLAMP, SLEEVE FERRITE	
* 9	A-4377-736-A	POWER SUPPLY BOARD, COMPLETE	
* 10	1-656-179-11	AC CONNECT BOARD	
11	4-970-685-01	PANEL (L), SIDE (for RIGHT) (BLACK)	
11	4-970-685-11	PANEL (L), SIDE (for RIGHT) (GOLD)	
12	4-970-686-01	PANEL (R), SIDE (for LEFT) (BLACK)	
12	4-970-686-11	PANEL (R), SIDE (for LEFT) (GOLD)	
13	4-970-123-01	FOOT (F50180S)	
14	4-970-124-01	CUSHION (F50180S)	
* 15	4-880-403-11	HEAT SINK	
16	4-967-959-01	SCREW (3X6)	
17	4-967-961-01	SCREW (3X8) (SPECIAL)	
* 18	3-309-144-21	HEAT SINK	
19	4-921-439-11	SCREW (M3X8), FLAT HEAD (SILVER).. (GOLD)	
19	4-921-439-21	SCREW (M3X8), FLAT HEAD (BLACK).. (BLACK)	
20	3-704-515-41	SCREW (BV/RING)	
21	3-849-226-01	CLOTH, UNWEAVED (25X6X0.5)	
* 22	3-349-025-31	HOLDER, PC BOARD	
23	1-769-078-51	LEAD (WITH CONNECTOR) (2 CORE)	
⚠T901	1-427-914-11	TRANSFORMER, POWER	

6-2. FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remark
51	4-942-568-01	EMBLEM (NO. 5), SONY (SILVER).. (BLACK)	
51	4-942-568-21	EMBLEM (NO. 5), SONY (GOLD).. (GOLD)	
52	4-973-151-01	PANEL, FRONT (BLACK)	
52	4-973-151-11	PANEL, FRONT (GOLD)	
53	4-973-146-01	WINDOW, INDICATION	
54	4-973-227-01	PLATE, ORNAMENTAL (BLACK)	
54	4-973-227-11	PLATE, ORNAMENTAL (GOLD)	
55	4-973-145-01	BASE, PANEL (BLACK)	
55	4-973-145-11	BASE, PANEL (GOLD)	
56	4-917-460-01	KNOB, POWER (BLACK)	
56	4-917-460-51	KNOB, POWER (GOLD)	
* 57	1-656-182-11	AC SWITCH BOARD	
58	4-973-149-01	BUTTON (BAND) (BLACK)	
58	4-973-149-11	BUTTON (BAND) (GOLD)	
59	4-973-148-01	BUTTON (TUNE) (BLACK)	
59	4-973-148-11	BUTTON (TUNE) (GOLD)	
60	4-973-150-01	BUTTON (5 GANG) (BLACK)	
60	4-973-150-41	BUTTON (5 GANG) (GOLD)	
61	4-973-150-11	BUTTON (5 GANG) (BLACK)	
61	4-973-150-51	BUTTON (5 GANG) (GOLD)	
62	4-973-150-21	BUTTON (5 GANG) (BLACK)	
62	4-973-150-61	BUTTON (5 GANG) (GOLD)	
63	4-973-150-31	BUTTON (5 GANG) (BLACK)	
63	4-973-150-71	BUTTON (5 GANG) (GOLD)	
64	1-773-601-11	WIRE (FLAT TYPE) (15 CORE)	
65	3-919-257-01	KNOB (TIMER) (BLACK).. (BLACK)	
65	3-919-257-11	KNOB (TIMER) (SILVER).. (GOLD)	
66	4-973-153-01	PLATE, GROUND	
* 67	1-656-178-11	PGM BOARD	
* 68	A-4377-734-A	DISPLAY BOARD, COMPLETE	
* 69	4-921-941-71	CUSHION (FL)	
* 70	4-945-292-01	HOLDER, INDICATION TUBE	
71	4-967-961-01	SCREW (3X8) (SPECIAL)	
FL701	1-517-408-11	INDICATOR TUBE, FLUORESCENT	

AC CONNECT

AC SWITCH

DISPLAY

SECTION 7
ELECTRICAL PARTS LIST

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- RESISTORS
  All resistors are in ohms
  F : nonflammable
- SEMICONDUCTORS
  In each case, u: μ , for example:
  uA...: μA..., uPA...: μPA..., uPB...: μPB..., uPC...: μPC..., uPD...: μPD...
- CAPACITORS
  uF : μF
- COILS
  uH : μH

Ref.No.	Part No.	Description			Remark
*	1-656-179-11	AC CONNECT BOARD			
		**********			
		< CAPACITOR >			
⚠C901	1-161-744-51	CERAMIC	0.01uF		400V
⚠C902	1-110-677-11	PE TE FILM	0.047uF		275V
		< CONNECTOR >			
CNP901	1-564-321-00	PIN, CONNECTOR 2P			
* CNP902	1-565-792-11	PIN, CONNECTOR 2P			
CNP903	1-564-321-00	PIN, CONNECTOR 2P			
		< FILTER >			
⚠T902	1-421-915-11	COIL, LINE FILTER			
**********					
*	1-656-182-11	AC SWITCH BOARD			
		**********			
		< CONNECTOR >			
CNP904	1-564-321-00	PIN, CONNECTOR 2P			
		< SWITCH >			
⚠S901	1-572-267-51	SWITCH, PUSH (AC POWER) (1 KEY) (POWER)			
**********					
*	A-4377-734-A	DISPLAY BOARD, COMPLETE			
		**********			
*	4-921-941-71	CUSHION (FL)			
*	4-945-292-01	HOLDER, INDICATION TUBE			
		< CAPACITOR >			
C751	1-126-177-11	ELECT	100uF	20%	10V
C752	1-164-159-11	CERAMIC	0.1uF		50V
C753	1-162-282-31	CERAMIC	100PF	10%	50V
C754	1-124-916-11	ELECT	22uF	20%	63V
C755	1-164-159-11	CERAMIC	0.1uF		50V
C756	1-126-157-11	ELECT	10uF	20%	16V
C757	1-162-282-31	CERAMIC	100PF	10%	50V
C758	1-162-282-31	CERAMIC	100PF	10%	50V
C759	1-162-282-31	CERAMIC	100PF	10%	50V
C760	1-162-282-31	CERAMIC	100PF	10%	50V
C761	1-162-282-31	CERAMIC	100PF	10%	50V
C762	1-162-282-31	CERAMIC	100PF	10%	50V
C763	1-162-282-31	CERAMIC	100PF	10%	50V
C764	1-162-282-31	CERAMIC	100PF	10%	50V
C765	1-162-282-31	CERAMIC	100PF	10%	50V
C766	1-162-282-31	CERAMIC	100PF	10%	50V
C767	1-162-282-31	CERAMIC	100PF	10%	50V
C768	1-162-282-31	CERAMIC	100PF	10%	50V
C769	1-162-282-31	CERAMIC	100PF	10%	50V
C770	1-162-282-31	CERAMIC	100PF	10%	50V
C771	1-162-282-31	CERAMIC	100PF	10%	50V
C772	1-162-282-31	CERAMIC	100PF	10%	50V
C774	1-164-159-11	CERAMIC	0.1uF		50V
C775	1-126-157-11	ELECT	10uF	20%	16V
C776	1-161-494-00	CERAMIC	0.022uF		25V
		< CONNECTOR >			
CNP701	1-766-203-11	PLUG, CONNECTOR PIN (PC BOARD) 5P			
CNS701	1-766-028-11	CONNECTOR, FFC (LIF (NON-ZIF)) 15P			
		< FLUORESCENT INDICATOR >			
FL701	1-517-408-11	INDICATOR TUBE, FLUORESCENT			
		< IC >			
IC702	8-741-810-59	IC SBX1610-59			
IC703	8-759-261-63	IC M66004M6FP			
		< COIL >			
L751	1-410-521-11	INDUCTOR	100uH		
L752	1-410-521-11	INDUCTOR	100uH		
		< TRANSISTOR >			
Q750	8-729-900-80	TRANSISTOR DTC114ES			
		< RESISTOR >			
R750	1-249-441-11	CARBON	100K	5%	1/4W
R751	1-249-434-11	CARBON	27K	5%	1/4W
R752	1-247-807-31	CARBON	100	5%	1/4W
R753	1-249-406-11	CARBON	120	5%	1/4W F
R754	1-249-406-11	CARBON	120	5%	1/4W F

Ref.No.	Part No.	Description				Remark
R755	1-249-406-11	CARBON	120	5%	1/4W	F
R756	1-249-406-11	CARBON	120	5%	1/4W	F
R757	1-249-406-11	CARBON	120	5%	1/4W	F
R758	1-249-406-11	CARBON	120	5%	1/4W	F
R759	1-247-811-31	CARBON	150	5%	1/4W	
R760	1-247-811-31	CARBON	150	5%	1/4W	
R761	1-247-811-31	CARBON	150	5%	1/4W	
R762	1-249-408-11	CARBON	180	5%	1/4W	F
R763	1-249-408-11	CARBON	180	5%	1/4W	F
R764	1-249-408-11	CARBON	180	5%	1/4W	F
R765	1-249-409-11	CARBON	220	5%	1/4W	F
R766	1-249-409-11	CARBON	220	5%	1/4W	F
R767	1-249-409-11	CARBON	220	5%	1/4W	F
R768	1-249-410-11	CARBON	270	5%	1/4W	F
R769	1-249-410-11	CARBON	270	5%	1/4W	F
R770	1-249-410-11	CARBON	270	5%	1/4W	F
R771	1-249-411-11	CARBON	330	5%	1/4W	
R772	1-249-411-11	CARBON	330	5%	1/4W	
R773	1-249-411-11	CARBON	330	5%	1/4W	
R774	1-249-413-11	CARBON	470	5%	1/4W	F
R775	1-249-413-11	CARBON	470	5%	1/4W	F
R776	1-249-413-11	CARBON	470	5%	1/4W	F
R777	1-249-414-11	CARBON	560	5%	1/4W	F
R778	1-249-414-11	CARBON	560	5%	1/4W	F
R779	1-249-414-11	CARBON	560	5%	1/4W	F
R780	1-249-416-11	CARBON	820	5%	1/4W	F
R784	1-249-423-11	CARBON	3.3K	5%	1/4W	F

< SWITCH >

S702	1-554-303-21	SWITCH, TACTILE	(SHIFT)
S703	1-554-303-21	SWITCH, TACTILE	(PTY)
S704	1-554-303-21	SWITCH, TACTILE	(NEWS, 1)
S705	1-554-303-21	SWITCH, TACTILE	(AFFAIRS, 2)
S706	1-554-303-21	SWITCH, TACTILE	(INFO, 3)
S707	1-554-303-21	SWITCH, TACTILE	(EDUCATE, 5)
S708	1-554-303-21	SWITCH, TACTILE	(DRAMA, 6)
S709	1-554-303-21	SWITCH, TACTILE	(SPORT, 4)
S710	1-554-303-21	SWITCH, TACTILE	(VARIED, 9)
S711	1-554-303-21	SWITCH, TACTILE	(CULTURE, 7)
S712	1-554-303-21	SWITCH, TACTILE	(SCIENCE, 8)
S713	1-554-303-21	SWITCH, TACTILE	(POP M, 10)
S714	1-554-303-21	SWITCH, TACTILE	(ROCK M, 11)
S715	1-554-303-21	SWITCH, TACTILE	(M.O.R. M, 12)
S716	1-554-303-21	SWITCH, TACTILE	(LIGHT M, 13)
S717	1-554-303-21	SWITCH, TACTILE	(CLASSICS, 14)
S718	1-554-303-21	SWITCH, TACTILE	(OTHER M, 15)
S719	1-554-303-21	SWITCH, TACTILE	(DISPLAY)
S720	1-554-303-21	SWITCH, TACTILE	(DIRECT)
S721	1-554-303-21	SWITCH, TACTILE	(UNDEFINED, 16)
S722	1-554-303-21	SWITCH, TACTILE	(EON)
S723	1-554-303-21	SWITCH, TACTILE	(CHARACTER)
S724	1-554-303-21	SWITCH, TACTILE	(MEMORY)
S725	1-554-303-21	SWITCH, TACTILE	(MONO)
S726	1-554-303-21	SWITCH, TACTILE	(+, SPEECH, TUNING/SELECT)
S727	1-554-303-21	SWITCH, TACTILE	(-, MUSIC, TUNING/SELECT)
S728	1-554-303-21	SWITCH, TACTILE	(DISPLAY MODE)
S729	1-554-303-21	SWITCH, TACTILE	(MENU)
S730	1-554-303-21	SWITCH, TACTILE	(FM INPUT)
S731	1-554-303-21	SWITCH, TACTILE	(BAND, DSR/FM/AM)

****

* A-4377-737-A MAIN BOARD, COMPLETE
****

* 4-880-403-11 HEAT SINK
7-682-548-04 SCREW +BVTT 3X8 (S)

< CAPACITOR >

C101	1-124-907-11	ELECT	10uF	20%	50V
C102	1-161-494-00	CERAMIC	0.022uF		25V
C103	1-164-159-11	CERAMIC	0.1uF		50V
C107	1-124-907-11	ELECT	10uF	20%	50V
C108	1-161-494-00	CERAMIC	0.022uF		25V
C111	1-124-907-11	ELECT	10uF	20%	50V
C112	1-124-907-11	ELECT	10uF	20%	50V
C113	1-161-494-00	CERAMIC	0.022uF		25V
C114	1-161-494-00	CERAMIC	0.022uF		25V
C115	1-161-494-00	CERAMIC	0.022uF		25V
C116	1-161-494-00	CERAMIC	0.022uF		25V
C117	1-124-477-11	ELECT	47uF	20%	25V
C118	1-164-159-11	CERAMIC	0.1uF		50V
C119	1-164-159-11	CERAMIC	0.1uF		50V
C120	1-124-907-11	ELECT	10uF	20%	50V
C121	1-164-159-11	CERAMIC	0.1uF		50V
C122	1-161-494-00	CERAMIC	0.022uF		25V
C123	1-162-203-31	CERAMIC	15PF	5%	50V
C124	1-162-203-31	CERAMIC	15PF	5%	50V
C125	1-162-203-31	CERAMIC	15PF	5%	50V
C126	1-162-203-31	CERAMIC	15PF	5%	50V
C127	1-162-203-31	CERAMIC	15PF	5%	50V
C128	1-161-494-00	CERAMIC	0.022uF		25V
C129	1-124-902-00	ELECT	0.47uF	20%	50V
C130	1-136-153-00	FILM	0.01uF	5%	50V
C131	1-161-494-00	CERAMIC	0.022uF		25V
C201	1-162-286-31	CERAMIC	220PF	10%	50V
C202	1-162-286-31	CERAMIC	220PF	10%	50V
C203	1-161-494-00	CERAMIC	0.022uF		25V
C204	1-106-343-00	MYLAR	1000PF	5%	200V
C205	1-136-173-00	FILM	0.47uF	5%	50V
C206	1-124-907-11	ELECT	10uF	20%	50V
C207	1-124-907-11	ELECT	10uF	20%	50V

MAIN

Ref.No.	Part No.	Description			Remark
C208	1-126-024-11	ELECT	220uF	20%	16V
C209	1-164-159-11	CERAMIC	0.1uF		50V
C210	1-162-294-31	CERAMIC	0.001uF	10%	50V
C301	1-126-024-11	ELECT	220uF	20%	16V
C302	1-164-159-11	CERAMIC	0.1uF		50V
C303	1-164-159-11	CERAMIC	0.1uF		50V
C304	1-126-024-11	ELECT	220uF	20%	16V
C305	1-164-159-11	CERAMIC	0.1uF		50V
C309	1-164-159-11	CERAMIC	0.1uF		50V
C310	1-164-159-11	CERAMIC	0.1uF		50V
C311	1-164-159-11	CERAMIC	0.1uF		50V
C312	1-162-203-31	CERAMIC	15PF	5%	50V
C313	1-162-306-11	CERAMIC	0.01uF	20%	16V
C314	1-162-306-11	CERAMIC	0.01uF	20%	16V
C315	1-162-294-31	CERAMIC	0.001uF	10%	50V
C317	1-126-024-11	ELECT	220uF	20%	16V
C318	1-126-024-11	ELECT	220uF	20%	16V
C320	1-136-808-11	FILM	100PF	5%	100V
C321	1-107-601-11	MICA	33PF	5%	500V
C322	1-107-601-11	MICA	33PF	5%	500V
C323	1-106-359-00	MYLAR	4700PF	5%	200V
C324	1-106-343-00	MYLAR	1000PF	5%	200V
C325	1-124-927-11	ELECT	4.7uF	20%	100V
C370	1-136-808-11	FILM	100PF	5%	100V
C371	1-107-601-11	MICA	33PF	5%	500V
C372	1-107-601-11	MICA	33PF	5%	500V
C373	1-106-359-00	MYLAR	4700PF	5%	200V
C374	1-106-343-00	MYLAR	1000PF	5%	200V
C375	1-124-927-11	ELECT	4.7uF	20%	100V
C401	1-126-104-11	ELECT	470uF	20%	35V
C402	1-161-494-00	CERAMIC	0.022uF		25V
C403	1-161-494-00	CERAMIC	0.022uF		25V
C404	1-124-477-11	ELECT	47uF	20%	25V
C405	1-161-494-00	CERAMIC	0.022uF		25V
C406	1-161-494-00	CERAMIC	0.022uF		25V
C407	1-161-494-00	CERAMIC	0.022uF		25V
C408	1-161-494-00	CERAMIC	0.022uF		25V
C409	1-161-494-00	CERAMIC	0.022uF		25V
C410	1-161-494-00	CERAMIC	0.022uF		25V
C411	1-161-494-00	CERAMIC	0.022uF		25V
C412	1-161-494-00	CERAMIC	0.022uF		25V
C413	1-164-159-11	CERAMIC	0.1uF		50V
C414	1-161-494-00	CERAMIC	0.022uF		25V
C415	1-162-294-31	CERAMIC	0.001uF	10%	50V
C416	1-161-494-00	CERAMIC	0.022uF		25V
C417	1-164-159-11	CERAMIC	0.1uF		50V
C418	1-164-159-11	CERAMIC	0.1uF		50V
C419	1-124-903-11	ELECT	1uF	20%	50V
C420	1-162-288-31	CERAMIC	330PF	10%	50V
C421	1-162-290-31	CERAMIC	470PF	10%	50V
C422	1-124-477-11	ELECT	47uF	20%	25V
C423	1-124-477-11	ELECT	47uF	20%	25V
C424	1-161-494-00	CERAMIC	0.022uF		25V
C425	1-126-024-11	ELECT	220uF	20%	16V
C426	1-161-494-00	CERAMIC	0.022uF		25V
C427	1-161-494-00	CERAMIC	0.022uF		25V
C428	1-161-494-00	CERAMIC	0.022uF		25V
C429	1-162-306-11	CERAMIC	0.01uF	20%	16V
C430	1-124-902-00	ELECT	0.47uF	20%	50V
C431	1-124-907-11	ELECT	10uF	20%	50V
C501	1-136-157-00	FILM	0.022uF	5%	50V
C502	1-161-494-00	CERAMIC	0.022uF		25V
C503	1-161-494-00	CERAMIC	0.022uF		25V
C504	1-161-494-00	CERAMIC	0.022uF		25V
C505	1-126-024-11	ELECT	220uF	20%	16V
C506	1-161-494-00	CERAMIC	0.022uF		25V
C507	1-161-494-00	CERAMIC	0.022uF		25V
C508	1-161-494-00	CERAMIC	0.022uF		25V
C509	1-126-962-11	ELECT	3.3uF	20%	50V
C510	1-124-927-11	ELECT	4.7uF	20%	100V
C511	1-162-294-31	CERAMIC	0.001uF	10%	50V
C512	1-126-023-11	ELECT	100uF	20%	16V
C513	1-124-903-11	ELECT	1uF	20%	50V
C514	1-124-903-11	ELECT	1uF	20%	50V
C515	1-164-159-11	CERAMIC	0.1uF		50V
C516	1-161-494-00	CERAMIC	0.022uF		25V
C517	1-124-907-11	ELECT	10uF	20%	50V
C518	1-161-494-00	CERAMIC	0.022uF		25V
C519	1-162-306-11	CERAMIC	0.01uF	20%	16V
C520	1-162-294-31	CERAMIC	0.001uF	10%	50V
C521	1-162-211-31	CERAMIC	33PF	5%	50V
C522	1-162-211-31	CERAMIC	33PF	5%	50V
C601	1-164-027-11	CERAMIC	22PF	5%	50V
C602	1-164-031-11	CERAMIC	33PF	5%	50V
C603	1-162-282-31	CERAMIC	100PF	10%	50V
C604	1-162-282-31	CERAMIC	100PF	10%	50V
C605	1-162-282-31	CERAMIC	100PF	10%	50V
C606	1-124-477-11	ELECT	47uF	20%	25V
C607	1-161-494-00	CERAMIC	0.022uF		25V
C608	1-124-767-00	ELECT	2.2uF	20%	50V
C609	1-161-494-00	CERAMIC	0.022uF		25V
C610	1-164-159-11	CERAMIC	0.1uF		50V
C611	1-124-120-11	ELECT	220uF	20%	25V
C612	1-161-494-00	CERAMIC	0.022uF		25V
C613	1-162-282-31	CERAMIC	100PF	10%	50V
C701	1-104-905-11	DOUBLE LAYERS	0.22F		5.5V
C702	1-124-477-11	ELECT	47uF	20%	25V
C703	1-162-306-11	CERAMIC	0.01uF	20%	16V
C704	1-124-477-11	ELECT	47uF	20%	25V
C705	1-162-306-11	CERAMIC	0.01uF	20%	16V

Ref. No.	Part No.	Description			Remark
C790	1-124-925-11	ELECT	2.2uF	20%	100V
C791	1-162-288-31	CERAMIC	330PF	10%	50V
C792	1-161-494-00	CERAMIC	0.022uF		25V
C793	1-162-291-31	CERAMIC	560PF	10%	50V
C794	1-124-477-11	ELECT	47uF	20%	25V
C795	1-161-494-00	CERAMIC	0.022uF		25V
C796	1-101-880-00	CERAMIC	47PF	5%	50V
C797	1-102-527-11	CERAMIC	82PF	5%	50V
C801	1-124-927-11	ELECT	4.7uF	20%	100V
C802	1-136-161-00	FILM	0.047uF	5%	50V
C803	1-124-477-11	ELECT	47uF	20%	25V
C804	1-126-011-11	ELECT	330uF	20%	16V
C805	1-124-903-11	ELECT	1uF	20%	50V
C806	1-124-903-11	ELECT	1uF	20%	50V
C807	1-124-903-11	ELECT	1uF	20%	50V
C808	1-124-903-11	ELECT	1uF	20%	50V
C809	1-124-902-00	ELECT	0.47uF	20%	50V
C810	1-126-011-11	ELECT	330uF	20%	16V
C811	1-164-098-11	CERAMIC	0.047uF		12V
C812	1-164-079-11	CERAMIC	330PF	10%	50V
C815	1-130-468-00	MYLAR	560PF	5%	50V
C816	1-106-351-00	MYLAR	2200PF	5%	200V
C817	1-126-059-11	ELECT	10uF	20%	50V
C818	1-164-070-11	CERAMIC	100PF	5%	50V
C819	1-124-927-11	ELECT	4.7uE	20%	100V
C820	1-162-286-31	CERAMIC	220PF	10%	50V
C840	1-124-589-11	ELECT	47uF	20%	16V
C841	1-126-154-11	ELECT	47uF	20%	6.3V
C842	1-162-219-31	CERAMIC	68PF	5%	50V
C865	1-130-468-00	MYLAR	560PF	5%	50V
C866	1-106-351-00	MYLAR	2200PF	5%	200V
C867	1-126-059-11	ELECT	10uF	20%	50V
C868	1-164-070-11	CERAMIC	100PF	5%	50V
C869	1-124-927-11	ELECT	4.7uF	20%	100V
C870	1-162-286-31	CERAMIC	220PF	10%	50V
C950	1-104-664-11	ELECT	47uF	20%	25V
C951	1-126-541-11	ELECT	330uF	20%	16V
C952	1-126-024-11	ELECT	220uF	20%	16V
C953	1-126-541-11	ELECT	330uF	20%	16V
C954	1-126-541-11	ELECT	330uF	20%	16V
C980	1-124-907-11	ELECT	10uF	20%	50V
C981	1-124-907-11	ELECT	10uF	20%	50V
C982	1-124-907-11	ELECT	10uF	20%	50V
C987	1-124-927-11	ELECT	4.7uF	20%	100V

< FILTER >

CF401	1-567-389-11	FILTER, CERAMIC	
CF402	1-567-389-11	FILTER, CERAMIC	
CF403	1-567-389-11	FILTER, CERAMIC	
CF404	1-567-107-71	FILTER, CERAMIC	
CF501	1-404-713-11	TRANSFORMER, IF	
CF502	1-527-981-00	FILTER, CERAMIC	
CF801	1-567-250-11	OSCILLATOR, CERAMIC	

< CONNECTOR >

* CNP201	1-564-509-11	PLUG, CONNECTOR 6P	
CNS751	1-764-920-11	CONNECTOR, FFC(LIF(NON-ZIF))15P	
CNS952	1-766-739-11	CONNECTOR, BOARD TO BOARD 8P	
CNS953	1-766-739-11	CONNECTOR, BOARD TO BOARD 8P	
CNS954	1-766-739-11	CONNECTOR, BOARD TO BOARD 8P	

< DIODE >

D101	8-719-918-45	DIODE	KV1310
D103	8-719-987-63	DIODE	1N4148M
D104	8-719-987-63	DIODE	1N4148M
D105	8-719-987-63	DIODE	1N4148M
D106	8-719-987-63	DIODE	1N4148M
D201	8-719-919-88	DIODE	SVC202SP
D202	8-719-987-63	DIODE	1N4148M
D301	8-719-918-45	DIODE	KV1310
D401	8-719-987-63	DIODE	1N4148M
D402	8-719-987-63	DIODE	1N4148M
D403	8-719-987-63	DIODE	1N4148M
D501	8-719-987-63	DIODE	1N4148M
D701	8-719-987-63	DIODE	1N4148M
D702	8-719-987-63	DIODE	1N4148M
D703	8-719-987-63	DIODE	1N4148M
D801	8-719-987-63	DIODE	1N4148M
D802	8-719-987-63	DIODE	1N4148M
D803	8-719-987-63	DIODE	1N4148M
D804	8-719-010-32	DIODE	UZ-4.7BSA
D980	8-719-200-82	DIODE	11ES2
D981	8-719-933-88	DIODE	HZS16-2L
D982	8-719-002-17	DIODE	UZL-20L-TP
D983	8-719-010-33	DIODE	UZ-4.7BSB
D984	8-719-010-33	DIODE	UZ-4.7BSB

< FERRITE BEAD >

FB101	1-410-397-21	FERRITE BEAD INDUCTOR
FB201	1-410-397-21	FERRITE BEAD INDUCTOR
FB301	1-410-397-21	FERRITE BEAD INDUCTOR
FB302	1-410-397-21	FERRITE BEAD INDUCTOR
FB303	1-410-397-21	FERRITE BEAD INDUCTOR
FB304	1-410-397-21	FERRITE BEAD INDUCTOR

< FRONTEND >

FE101	1-693-284-11	FRONT END (DSR)(INPUT SATELLITE 1ST IF)
FE102	8-598-328-00	TUNER, PLL BTP-AC701 (INPUT CABLE)
FE401	1-693-212-11	FRONT END (FTZ)
FE501	1-233-290-11	ENCAPSULATED COMPONENT

MAIN

Ref. No.	Part No.	Description	Remark
		< IC >	
IC101	8-759-991-16	IC LM358N	
IC102	8-759-168-20	IC TA78L09S	
IC104	8-759-729-03	IC NJM2903D	
IC105	8-759-332-95	IC SDA6310X	
IC201	8-759-086-02	IC CXD8423Q	
IC202	8-759-745-61	IC NJM4560D-D	
IC301	8-759-287-70	IC CXD8505Q	
IC302	8-759-032-81	IC MC74HC74AN	
IC303	8-759-921-10	IC SN74HC86AN	
IC304	8-759-982-03	IC RC5532D-D	
IC354	8-759-982-03	IC RC5532D-D	
IC401	8-759-812-35	IC LA1235	
IC402	8-759-634-51	IC M5218AP	
IC501	8-759-812-45	IC LA1245	
IC601	8-759-288-54	IC LC72130	
IC701	8-759-335-87	IC uPD78058-GC051-3B9	
IC790	8-759-169-99	IC SAA6579	
IC801	8-759-801-80	IC LA3401	
IC802	8-759-634-51	IC M5218AP	
IC803	8-749-921-12	IC GP1F32T (DSR DIGITAL OUT OPTICAL)	
		< COIL >	
L101	1-410-499-41	INDUCTOR 1.5uH	
L104	1-411-212-11	COIL (OSC)	
L301	1-460-098-11	COIL	
L501	1-414-142-11	INDUCTOR 1uH	
L701	1-410-324-11	INDUCTOR 4.7uH	
L801	1-410-324-11	INDUCTOR 4.7uH	
		< FILTER >	
LPF801	1-235-164-00	FILTER, LOW PASS	
LPF851	1-235-164-00	FILTER, LOW PASS	
		< JACK >	
PJ801	1-568-751-61	JACK, PIN (2P SHIELD TYPE)(LINE OUT)	
PJ802	1-568-750-21	JACK, PIN (1P SHIELD TYPE) (DSR DIGITAL OUT COAXIAL)	
		< TRANSISTOR >	
Q101	8-729-232-26	TRANSISTOR 2SC2668-OY	
Q102	8-729-119-79	TRANSISTOR 2SC2785-FEK	
Q301	8-729-900-89	TRANSISTOR DTC144ES	
Q302	8-729-900-65	TRANSISTOR DTA144ES	
Q303	8-729-922-37	TRANSISTOR 2SD2144S-UVW	
Q304	8-729-922-37	TRANSISTOR 2SD2144S-UVW	
Q352	8-729-900-65	TRANSISTOR DTA144ES	
Q353	8-729-922-37	TRANSISTOR 2SD2144S-UVW	
Q354	8-729-922-37	TRANSISTOR 2SD2144S-UVW	
Q401	8-729-904-39	TRANSISTOR DTC114TS	
Q402	8-729-904-39	TRANSISTOR DTC114TS	
Q403	8-729-230-99	TRANSISTOR 2SC2669OY-E4	
Q404	8-729-230-99	TRANSISTOR 2SC2669OY-E4	
Q405	8-729-230-99	TRANSISTOR 2SC2669OY-E4	
Q406	8-729-230-99	TRANSISTOR 2SC2669OY-E4	
Q407	8-729-230-99	TRANSISTOR 2SC2669OY-E4	
Q408	8-729-230-99	TRANSISTOR 2SC2669OY-E4	
Q409	8-729-230-99	TRANSISTOR 2SC2669OY-E4	
Q601	8-729-900-63	TRANSISTOR DTA124ES	
Q602	8-729-900-63	TRANSISTOR DTA124ES	
Q830	8-729-900-63	TRANSISTOR DTA124ES	
Q980	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q981	8-729-209-15	TRANSISTOR 2SD2012	
Q982	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q983	8-729-900-89	TRANSISTOR DTC144ES	
Q984	8-729-900-89	TRANSISTOR DTC144ES	
		< RESISTOR >	
R101	1-249-421-11	CARBON 2.2K 5% 1/4W	F
R102	1-249-417-11	CARBON 1K 5% 1/4W	F
R103	1-249-427-11	CARBON 6.8K 5% 1/4W	F
R104	1-249-397-11	CARBON 22 5% 1/4W	F
R105	1-249-409-11	CARBON 220 5% 1/4W	F
R106	1-249-411-11	CARBON 330 5% 1/4W	
R107	1-249-429-11	CARBON 10K 5% 1/4W	
R108	1-249-397-11	CARBON 22 5% 1/4W	F
R109	1-249-397-11	CARBON 22 5% 1/4W	F
R110	1-249-417-11	CARBON 1K 5% 1/4W	F
R111	1-249-417-11	CARBON 1K 5% 1/4W	F
R112	1-247-891-00	CARBON 330K 5% 1/4W	
R113	1-249-437-11	CARBON 47K 5% 1/4W	
R114	1-249-411-11	CARBON 330 5% 1/4W	
R115	1-249-425-11	CARBON 4.7K 5% 1/4W	F
R116	1-249-441-11	CARBON 100K 5% 1/4W	
R117	1-249-441-11	CARBON 100K 5% 1/4W	
R118	1-249-433-11	CARBON 22K 5% 1/4W	
R119	1-249-433-11	CARBON 22K 5% 1/4W	
R120	1-249-433-11	CARBON 22K 5% 1/4W	
R121	1-249-433-11	CARBON 22K 5% 1/4W	
R122	1-249-441-11	CARBON 100K 5% 1/4W	
R123	1-247-891-00	CARBON 330K 5% 1/4W	
R124	1-249-441-11	CARBON 100K 5% 1/4W	
R125	1-249-427-11	CARBON 6.8K 5% 1/4W	F
⚠R127	1-249-405-11	CARBON 100 5% 1/4W	F
R201	1-247-903-00	CARBON 1M 5% 1/4W	
R202	1-249-433-11	CARBON 22K 5% 1/4W	
R203	1-249-433-11	CARBON 22K 5% 1/4W	
R204	1-249-417-11	CARBON 1K 5% 1/4W	F
R205	1-249-429-11	CARBON 10K 5% 1/4W	
R206	1-249-417-11	CARBON 1K 5% 1/4W	F

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref.No.	Part No.	Description				Remark
R207	1-249-429-11	CARBON	10K	5%	1/4W	
R208	1-249-419-11	CARBON	1.5K	5%	1/4W	F
R209	1-249-429-11	CARBON	10K	5%	1/4W	
R210	1-249-437-11	CARBON	47K	5%	1/4W	
R211	1-247-807-31	CARBON	100	5%	1/4W	
R212	1-247-807-31	CARBON	100	5%	1/4W	
R213	1-247-807-31	CARBON	100	5%	1/4W	
R214	1-247-807-31	CARBON	100	5%	1/4W	
R215	1-247-807-31	CARBON	100	5%	1/4W	
R216	1-247-807-31	CARBON	100	5%	1/4W	
R217	1-249-417-11	CARBON	1K	5%	1/4W	F
R301	1-249-409-11	CARBON	220	5%	1/4W	F
R302	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R303	1-247-903-00	CARBON	1M	5%	1/4W	
R304	1-249-441-11	CARBON	100K	5%	1/4W	
R305	1-249-437-11	CARBON	47K	5%	1/4W	
R306	1-249-413-11	CARBON	470	5%	1/4W	F
R310	1-249-435-11	CARBON	33K	5%	1/4W	
R311	1-249-435-11	CARBON	33K	5%	1/4W	
R312	1-249-435-11	CARBON	33K	5%	1/4W	
R313	1-249-435-11	CARBON	33K	5%	1/4W	
R314	1-249-433-11	CARBON	22K	5%	1/4W	
R315	1-249-433-11	CARBON	22K	5%	1/4W	
R316	1-249-437-11	CARBON	47K	5%	1/4W	
R317	1-249-437-11	CARBON	47K	5%	1/4W	
R318	1-249-419-11	CARBON	1.5K	5%	1/4W	F
R319	1-249-419-11	CARBON	1.5K	5%	1/4W	F
R320	1-247-887-00	CARBON	220K	5%	1/4W	
R322	1-249-411-11	CARBON	330	5%	1/4W	
R360	1-249-435-11	CARBON	33K	5%	1/4W	
R361	1-249-435-11	CARBON	33K	5%	1/4W	
R362	1-249-435-11	CARBON	33K	5%	1/4W	
R363	1-249-435-11	CARBON	33K	5%	1/4W	
R364	1-249-433-11	CARBON	22K	5%	1/4W	
R365	1-249-433-11	CARBON	22K	5%	1/4W	
R366	1-249-437-11	CARBON	47K	5%	1/4W	
R367	1-249-437-11	CARBON	47K	5%	1/4W	
R368	1-249-419-11	CARBON	1.5K	5%	1/4W	F
R369	1-249-419-11	CARBON	1.5K	5%	1/4W	F
R370	1-247-887-00	CARBON	220K	5%	1/4W	
R372	1-249-411-11	CARBON	330	5%	1/4W	
R401	1-249-403-11	CARBON	68	5%	1/4W	F
R402	1-249-403-11	CARBON	68	5%	1/4W	F
R403	1-249-395-11	CARBON	15	5%	1/4W	F
⚠R406	1-249-393-11	CARBON	10	5%	1/4W	F
R407	1-249-411-11	CARBON	330	5%	1/4W	
R408	1-249-393-11	CARBON	10	5%	1/4W	F
R409	1-249-411-11	CARBON	330	5%	1/4W	
R410	1-249-431-11	CARBON	15K	5%	1/4W	
R411	1-249-411-11	CARBON	330	5%	1/4W	
R412	1-249-411-11	CARBON	330	5%	1/4W	
R413	1-249-433-11	CARBON	22K	5%	1/4W	
⚠R414	1-249-393-11	CARBON	10	5%	1/4W	F
⚠R415	1-249-393-11	CARBON	10	5%	1/4W	F
⚠R416	1-249-393-11	CARBON	10	5%	1/4W	F
R417	1-249-411-11	CARBON	330	5%	1/4W	
R418	1-249-431-11	CARBON	15K	5%	1/4W	
R419	1-249-411-11	CARBON	330	5%	1/4W	
R420	1-249-411-11	CARBON	330	5%	1/4W	
R421	1-249-433-11	CARBON	22K	5%	1/4W	
R422	1-249-411-11	CARBON	330	5%	1/4W	
R423	1-247-804-11	CARBON	75	5%	1/4W	
R424	1-249-417-11	CARBON	1K	5%	1/4W	F
R425	1-249-411-11	CARBON	330	5%	1/4W	
R426	1-249-431-11	CARBON	15K	5%	1/4W	
R427	1-249-417-11	CARBON	1K	5%	1/4W	F
R428	1-249-413-11	CARBON	470	5%	1/4W	F
R429	1-249-411-11	CARBON	330	5%	1/4W	
R430	1-247-807-31	CARBON	100	5%	1/4W	
R431	1-249-413-11	CARBON	470	5%	1/4W	F
R432	1-247-807-31	CARBON	100	5%	1/4W	
R433	1-249-429-11	CARBON	10K	5%	1/4W	
R434	1-249-413-11	CARBON	470	5%	1/4W	F
R435	1-249-437-11	CARBON	47K	5%	1/4W	
R436	1-249-439-11	CARBON	68K	5%	1/4W	
R437	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R438	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R439	1-249-432-11	CARBON	18K	5%	1/4W	
R440	1-249-424-11	CARBON	3.9K	5%	1/4W	F
R441	1-249-422-11	CARBON	2.7K	5%	1/4W	F
⚠R443	1-249-393-11	CARBON	10	5%	1/4W	F
R444	1-249-439-11	CARBON	68K	5%	1/4W	
R445	1-249-437-11	CARBON	47K	5%	1/4W	
R446	1-249-441-11	CARBON	100K	5%	1/4W	
R447	1-249-419-11	CARBON	1.5K	5%	1/4W	F
R448	1-249-433-11	CARBON	22K	5%	1/4W	
R449	1-249-426-11	CARBON	5.6K	5%	1/4W	
R450	1-249-409-11	CARBON	220	5%	1/4W	F
R501	1-249-441-11	CARBON	100K	5%	1/4W	
R502	1-249-437-11	CARBON	47K	5%	1/4W	
R503	1-249-421-11	CARBON	2.2K	5%	1/4W	F
⚠R504	1-249-397-11	CARBON	22	5%	1/4W	F
R505	1-249-413-11	CARBON	470	5%	1/4W	F
R506	1-249-429-11	CARBON	10K	5%	1/4W	
R507	1-249-429-11	CARBON	10K	5%	1/4W	
R508	1-249-429-11	CARBON	10K	5%	1/4W	
⚠R510	1-249-393-11	CARBON	10	5%	1/4W	F
R511	1-247-807-31	CARBON	100	5%	1/4W	
R512	1-249-404-00	CARBON	82	5%	1/4W	F
R513	1-247-883-00	CARBON	150K	5%	1/4W	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

MAIN

Ref.No.	Part No.	Description				Remark
R514	1-249-429-11	CARBON	10K	5%	1/4W	
⚠R601	1-249-405-11	CARBON	100	5%	1/4W	F
⚠R602	1-249-393-11	CARBON	10	5%	1/4W	F
R603	1-249-423-11	CARBON	3.3K	5%	1/4W	F
R604	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R605	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R606	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R607	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R608	1-247-807-31	CARBON	100	5%	1/4W	
R609	1-249-429-11	CARBON	10K	5%	1/4W	
R610	1-249-417-11	CARBON	1K	5%	1/4W	F
R611	1-247-807-31	CARBON	100	5%	1/4W	
R612	1-247-807-31	CARBON	100	5%	1/4W	
R613	1-249-429-11	CARBON	10K	5%	1/4W	
R701	1-247-807-31	CARBON	100	5%	1/4W	
R702	1-249-429-11	CARBON	10K	5%	1/4W	
R703	1-249-417-11	CARBON	1K	5%	1/4W	F
R704	1-249-417-11	CARBON	1K	5%	1/4W	F
R705	1-249-417-11	CARBON	1K	5%	1/4W	F
R706	1-249-417-11	CARBON	1K	5%	1/4W	F
R707	1-249-417-11	CARBON	1K	5%	1/4W	F
R708	1-249-417-11	CARBON	1K	5%	1/4W	F
R709	1-249-417-11	CARBON	1K	5%	1/4W	F
R710	1-249-417-11	CARBON	1K	5%	1/4W	F
R711	1-249-417-11	CARBON	1K	5%	1/4W	F
R712	1-249-417-11	CARBON	1K	5%	1/4W	F
R713	1-249-417-11	CARBON	1K	5%	1/4W	F
R714	1-249-417-11	CARBON	1K	5%	1/4W	F
R715	1-249-417-11	CARBON	1K	5%	1/4W	F
R716	1-249-417-11	CARBON	1K	5%	1/4W	F
R717	1-249-417-11	CARBON	1K	5%	1/4W	F
R718	1-249-417-11	CARBON	1K	5%	1/4W	F
R719	1-249-417-11	CARBON	1K	5%	1/4W	F
R720	1-249-417-11	CARBON	1K	5%	1/4W	F
R721	1-249-417-11	CARBON	1K	5%	1/4W	F
R722	1-249-417-11	CARBON	1K	5%	1/4W	F
R723	1-249-417-11	CARBON	1K	5%	1/4W	F
R724	1-249-417-11	CARBON	1K	5%	1/4W	F
R725	1-249-417-11	CARBON	1K	5%	1/4W	F
R726	1-249-417-11	CARBON	1K	5%	1/4W	F
R727	1-249-417-11	CARBON	1K	5%	1/4W	F
R728	1-249-417-11	CARBON	1K	5%	1/4W	F
R729	1-249-417-11	CARBON	1K	5%	1/4W	F
R730	1-249-417-11	CARBON	1K	5%	1/4W	F
R731	1-249-419-11	CARBON	1.5K	5%	1/4W	F
R732	1-249-419-11	CARBON	1.5K	5%	1/4W	F
R733	1-249-419-11	CARBON	1.5K	5%	1/4W	F
R734	1-247-807-31	CARBON	100	5%	1/4W	
R735	1-247-807-31	CARBON	100	5%	1/4W	
R736	1-247-807-31	CARBON	100	5%	1/4W	

Ref.No.	Part No.	Description				Remark
R737	1-249-429-11	CARBON	10K	5%	1/4W	
R738	1-249-417-11	CARBON	1K	5%	1/4W	F
R739	1-247-807-31	CARBON	100	5%	1/4W	
R740	1-249-417-11	CARBON	1K	5%	1/4W	F
R741	1-249-417-11	CARBON	1K	5%	1/4W	F
R742	1-247-807-31	CARBON	100	5%	1/4W	
R743	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R744	1-249-429-11	CARBON	10K	5%	1/4W	
R745	1-249-415-11	CARBON	680	5%	1/4W	F
R746	1-249-417-11	CARBON	1K	5%	1/4W	F
R747	1-247-807-31	CARBON	100	5%	1/4W	
R748	1-247-807-31	CARBON	100	5%	1/4W	
R749	1-249-417-11	CARBON	1K	5%	1/4W	F
⚠R790	1-249-393-11	CARBON	10	5%	1/4W	F
R791	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R792	1-249-411-11	CARBON	330	5%	1/4W	
R793	1-249-411-11	CARBON	330	5%	1/4W	
⚠R801	1-249-393-11	CARBON	10	5%	1/4W	F
R802	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R803	1-249-437-11	CARBON	47K	5%	1/4W	
R804	1-249-437-11	CARBON	47K	5%	1/4W	
R805	1-249-427-11	CARBON	6.8K	5%	1/4W	F
R810	1-247-878-00	CARBON	91K	5%	1/4W	
R811	1-247-883-00	CARBON	150K	5%	1/4W	
R812	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R813	1-249-427-11	CARBON	6.8K	5%	1/4W	F
R814	1-249-427-11	CARBON	6.8K	5%	1/4W	F
R815	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R816	1-249-441-11	CARBON	100K	5%	1/4W	
R817	1-249-413-11	CARBON	470	5%	1/4W	F
R818	1-247-807-31	CARBON	100	5%	1/4W	
R820	1-249-437-11	CARBON	47K	5%	1/4W	
R821	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R822	1-249-417-11	CARBON	1K	5%	1/4W	F
R830	1-249-417-11	CARBON	1K	5%	1/4W	F
R831	1-249-437-11	CARBON	47K	5%	1/4W	
R832	1-249-437-11	CARBON	47K	5%	1/4W	
R840	1-247-807-31	CARBON	100	5%	1/4W	
R841	1-249-411-11	CARBON	330	5%	1/4W	
R860	1-247-878-00	CARBON	91K	5%	1/4W	
R861	1-247-883-00	CARBON	150K	5%	1/4W	
R862	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R863	1-249-427-11	CARBON	6.8K	5%	1/4W	F
R864	1-249-427-11	CARBON	6.8K	5%	1/4W	F
R865	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R866	1-249-441-11	CARBON	100K	5%	1/4W	
R867	1-249-413-11	CARBON	470	5%	1/4W	F
R868	1-247-807-31	CARBON	100	5%	1/4W	
R870	1-249-437-11	CARBON	47K	5%	1/4W	
R871	1-249-425-11	CARBON	4.7K	5%	1/4W	F

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Ref. No.	Part No.	Description				Remark
R872	1-249-417-11	CARBON	1K	5%	1/4W	F
⚠R980	1-260-070-11	CARBON	3.3	5%	1/2W	F
R981	1-249-430-11	CARBON	12K	5%	1/4W	
R982	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R983	1-249-413-11	CARBON	470	5%	1/4W	F
R984	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R985	1-249-437-11	CARBON	47K	5%	1/4W	
R986	1-249-429-11	CARBON	10K	5%	1/4W	
R987	1-249-435-11	CARBON	33K	5%	1/4W	
R988	1-249-399-11	CARBON	33	5%	1/4W	F
		< VARIABLE RESISTOR >				
RV101	1-241-630-11	RES, ADJ, CARBON 10K				
RV102	1-241-630-11	RES, ADJ, CARBON 10K				
RV103	1-241-630-11	RES, ADJ, CARBON 10K				
RV201	1-241-763-11	RES, ADJ, CARBON 4.7K				
RV401	1-241-765-11	RES, ADJ, CARBON 22K				
RV402	1-241-630-11	RES, ADJ, CARBON 10K				
RV501	1-241-630-11	RES, ADJ, CARBON 10K				
RV801	1-241-767-21	RES, ADJ, CARBON 100K				
		< RELAY >				
RY401	1-515-614-11	RELAY				
RY402	1-515-614-11	RELAY				
RY801	1-515-614-11	RELAY				
		< FILTER >				
SAW101	1-760-600-11	FILTER				
		< TRANSFORMER >				
T401	1-411-213-11	BALUN				
T402	1-235-126-00	ENCAPSULATED COMPONENT				
T403	1-404-845-11	COIL, DISCRI (PRIMARY)				
T404	1-404-846-11	COIL, DISCRI (SECONDARY)				
		< TERMINAL >				
TM401	1-537-488-11	TERMINAL BOARD (ANT)(FM/AM ANTENNA)				
		< TEST PIN >				
* TP401	1-565-513-11	PIN, CONNECTOR 2P				
		< VIBRATOR >				
X201	1-579-736-11	VIBRATOR, CRYSTAL (20.48MHz)				
X601	1-760-549-11	VIBRATOR, CRYSTAL (4.5MHz)				
X701	1-579-233-11	VIBRATOR, CERAMIC (5MHz)				
X790	1-579-900-21	VIBRATOR, CRYSTAL (4.332MHz)				

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Ref. No.	Part No.	Description				Remark
*	1-656-178-11	PGM BOARD				
		*********				
		< CAPACITOR >				
C773	1-164-159-11	CERAMIC	0.1uF			50V
		< CONNECTOR >				
CNS702	1-766-200-11	SOCKET, CONNECTOR PIN 5P				
		< RESISTOR >				
R781	1-249-416-11	CARBON	820	5%	1/4W	F
R782	1-249-423-11	CARBON	3.3K	5%	1/4W	F
R783	1-249-423-11	CARBON	3.3K	5%	1/4W	F
		< SWITCH >				
S701	1-572-268-11	SWITCH, SLIDE (PROGRAM)				
S732	1-572-184-11	SWITCH, KEYBOARD (CHECK)				

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*	A-4377-736-A	POWER SUPPLY BOARD, COMPLETE				
		**********				
*	3-309-144-21	HEAT SINK				
	7-682-548-04	SCREW +BVTT 3X8 (S)				
		< CAPACITOR >				
C903	1-164-096-11	CERAMIC	0.01uF			50V
C904	1-164-096-11	CERAMIC	0.01uF			50V
C905	1-164-096-11	CERAMIC	0.01uF			50V
C906	1-164-096-11	CERAMIC	0.01uF			50V
C913	1-124-636-00	ELECT	3300uF	20%		25V
C914	1-124-636-00	ELECT	3300uF	20%		25V
C915	1-124-636-00	ELECT	3300uF	20%		25V
C916	1-124-920-11	ELECT	330uF	20%		50V
C917	1-124-920-11	ELECT	330uF	20%		50V
C918	1-126-541-11	ELECT	330uF	20%		16V
C919	1-126-541-11	ELECT	330uF	20%		16V
C920	1-126-541-11	ELECT	330uF	20%		16V
C921	1-126-541-11	ELECT	330uF	20%		16V
C922	1-124-910-11	ELECT	47uF	20%		50V
C923	1-124-910-11	ELECT	47uF	20%		50V
C924	1-124-910-11	ELECT	47uF	20%		50V
C925	1-124-910-11	ELECT	47uF	20%		50V
C926	1-124-903-11	ELECT	1uF	20%		50V
C927	1-124-907-11	ELECT	10uF	20%		50V
C928	1-124-464-11	ELECT	0.22uF	20%		50V
C929	1-164-159-11	CERAMIC	0.1uF			50V
C930	1-124-913-11	ELECT	470uF	20%		50V
C931	1-161-494-00	CERAMIC	0.022uF			25V
C932	1-161-494-00	CERAMIC	0.022uF			25V

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Replace only with part number specified.

POWER SUPPLY

Ref. No.	Part No.	Description	Remark
C933	1-164-159-11	CERAMIC 0.1uF	50V
		< CONNECTOR >	
* CNP950	1-560-338-00	PIN, CONNECTOR 7P	
* CNP951	1-560-063-00	PIN, CONNECTOR 5P	
CNP952	1-568-669-11	CONNECTOR, BOARD TO BOARD 8P	
CNP953	1-568-669-11	CONNECTOR, BOARD TO BOARD 8P	
CNP954	1-568-669-11	CONNECTOR, BOARD TO BOARD 8P	
		< DIODE >	
D901	8-719-200-82	DIODE 11ES2	
D902	8-719-200-82	DIODE 11ES2	
D903	8-719-200-82	DIODE 11ES2	
D904	8-719-200-82	DIODE 11ES2	
D905	8-719-200-82	DIODE 11ES2	
D906	8-719-200-82	DIODE 11ES2	
D907	8-719-200-82	DIODE 11ES2	
D908	8-719-200-82	DIODE 11ES2	
D909	8-719-200-82	DIODE 11ES2	
D910	8-719-200-82	DIODE 11ES2	
D911	8-719-200-82	DIODE 11ES2	
D912	8-719-200-82	DIODE 11ES2	
D913	8-719-934-22	LED HZS30-2L	
D914	8-719-934-22	LED HZS30-2L	
D915	8-719-987-63	DIODE 1N4148M	
D916	8-719-987-63	DIODE 1N4148M	
D917	8-719-014-74	DIODE UZP-6.2B	
D918	8-719-200-82	DIODE 11ES2	
D919	8-719-200-82	DIODE 11ES2	
		< IC >	
IC901	8-759-263-43	IC TA78M12S	
IC902	8-759-604-45	IC M5F79M12	
IC903	8-759-231-53	IC TA7805S	
IC904	8-759-231-53	IC TA7805S	
IC905	8-759-333-83	IC NJM2103D	
		< TRANSISTOR >	
Q950	8-729-030-19	TRANSISTOR 2SB1640	
Q951	8-729-030-19	TRANSISTOR 2SB1640	
Q952	8-729-900-65	TRANSISTOR DTA144ES	
Q953	8-729-900-89	TRANSISTOR DTC144ES	
Q954	8-729-900-89	TRANSISTOR DTC144ES	
Q955	8-729-900-80	TRANSISTOR DTC114ES	
Q956	8-729-030-19	TRANSISTOR 2SB1640	
Q957	8-729-030-19	TRANSISTOR 2SB1640	
Q958	8-729-900-89	TRANSISTOR DTC144ES	
Q961	8-729-030-18	TRANSISTOR 2SD2525	
Q962	8-729-900-89	TRANSISTOR DTC144ES	
Q963	8-729-119-79	TRANSISTOR 2SC2785-FEK	
Q964	8-729-119-76	TRANSISTOR 2SA1175-HFE	

Ref. No.	Part No.	Description				Remark
		< RESISTOR >				
⚠R902	1-247-704-11	CARBON	220	5%	1/4W	F
⚠R903	1-247-704-11	CARBON	220	5%	1/4W	F
R950	1-249-429-11	CARBON	10K	5%	1/4W	
R951	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R952	1-249-417-11	CARBON	1K	5%	1/4W	F
R953	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R954	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R955	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R956	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R957	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R958	1-249-435-11	CARBON	33K	5%	1/4W	
R959	1-249-429-11	CARBON	10K	5%	1/4W	
R960	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R961	1-249-429-11	CARBON	10K	5%	1/4W	
R962	1-249-423-11	CARBON	3.3K	5%	1/4W	F
R963	1-249-429-11	CARBON	10K	5%	1/4W	
R964	1-249-417-11	CARBON	1K	5%	1/4W	F
R965	1-249-423-11	CARBON	3.3K	5%	1/4W	F
R966	1-249-429-11	CARBON	10K	5%	1/4W	
R967	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R968	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R969	1-249-441-11	CARBON	100K	5%	1/4W	
R970	1-249-417-11	CARBON	1K	5%	1/4W	F

****

MISCELLANEOUS
****

⚠6	1-574-383-11	CORD, POWER
8	1-543-827-11	CLAMP, SLEEVE FERRITE
64	1-773-601-11	WIRE (FLAT TYPE) (15 CORE)
FL701	1-517-408-11	INDICATOR TUBE, FLUORESCENT
⚠T901	1-427-914-11	TRANSFORMER, POWER

****

ACCESSORIES & PACKING MATERIALS
****

	1-473-134-11	REMOTE COMMANDER (RM-D1001)
	1-501-567-51	ANTENNA, LOOP (LW/MW/SW)
	1-501-594-11	ANTENNA (FM)
	1-590-925-31	CORD, CONNECTION (AUDIO 100cm)
	3-707-584-21	COVER, BATTERY (for RM-D1001)
	3-798-470-11	MANUAL, INSTRUCTION (ENGLISH, FRENCH, DUTCH) (AEP)
	3-798-470-21	MANUAL, INSTRUCTION (GERMAN)
*	4-972-249-01	CUSHION

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Ref. No.	Part No.	Description	Remark
		********** HARDWARE LIST **********	
#1	7-685-650-79	SCREW +BVTP 3X16 TYPE2 IT-3	
#2	7-682-548-04	SCREW +BVTT 3X8 (S)	
#3	7-682-547-09	SCREW +BVTT 3X6 (S)	

9-960-161-11

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Consumer A&V Products Company
Home A&V Products Div.

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